IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Thomas J. Pavela	Examiner:	Ted T. Vo
Serial No.:	To be assigned	Group Art Unit:	2122
Filed:	September 19, 2001	Docket:	ST9-98-107US2
Title:	SYSTEM AND METHOD FOR DEVELOPING TEST CASES USING A TEST OBJECT LIBRARY		

CERTIFICATE OF MAILING UNDER 37 CFR 1.10
'Express Mail' mailing label number: EL815953376US
Date of Deposit: September 19, 2001
I hereby certify that this paper or fee is being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 and is addressed to the Commissioner for Patents, Washington, D C. 20231.

By: Isabell Ogata
Name: Isabell Ogata

SUBMISSION OF FORMAL DRAWING

Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Submitted herewith are 40 sheets of Formal Drawings for the above-identified patent application.

Respectfully submitted,

Thomas J. Pavela

By his attorneys

GATES & COOPER LLP

Howard Hughes Center
6701 Center Drive West, Suite 1050
Los Angeles, CA 90045
(310) 641-8797

Date: September 19, 2001

By: Victor G. Cooper
Name: Victor G. Cooper
Reg. No.: 39,641

VGC/io

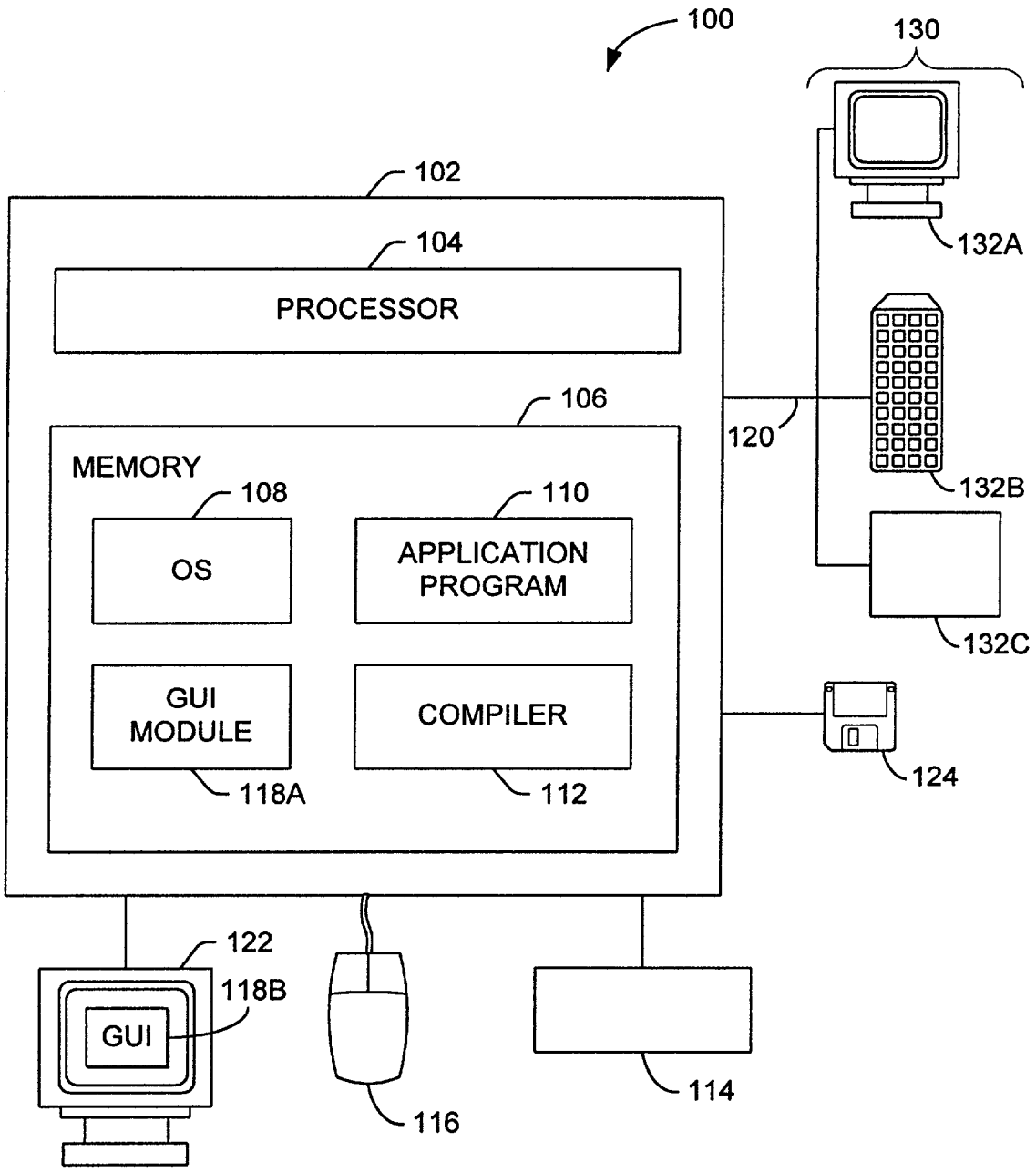

100
130
102
104
PROCESSOR
106
MEMORY
108
OS
110
APPLICATION PROGRAM
GUI MODULE
118A
COMPILER
112
120
132A
132B
132C
124
122
118B
GUI
116
114

FIG. 1

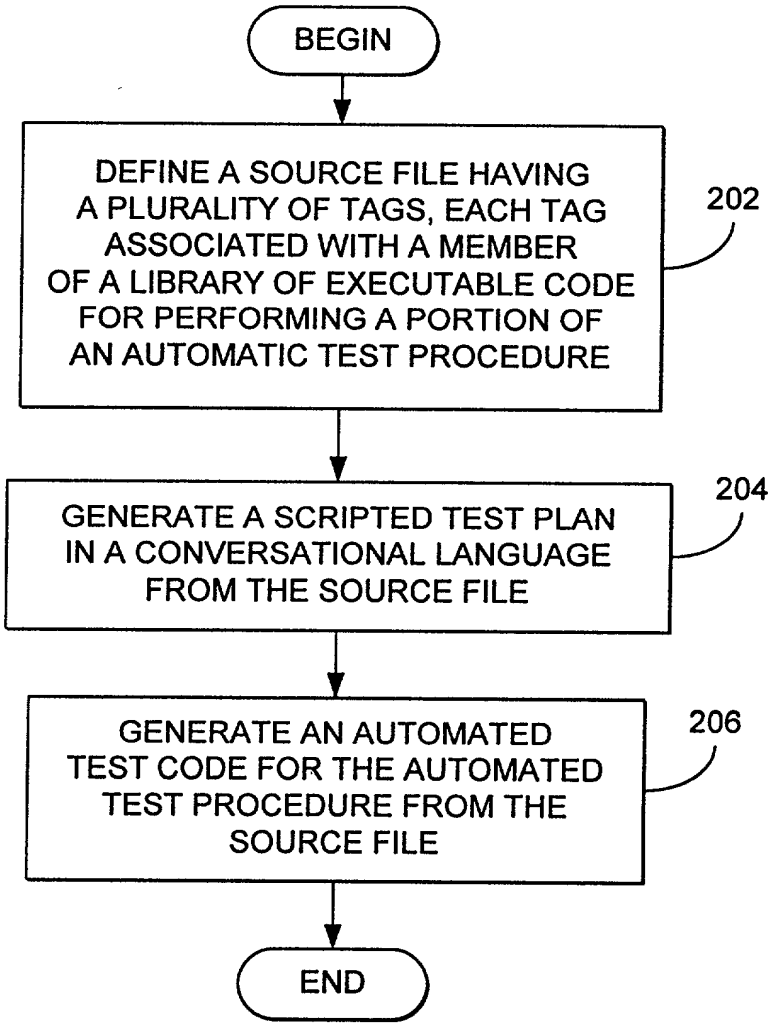

BEGIN
DEFINE A SOURCE FILE HAVING A PLURALITY OF TAGS, EACH TAG ASSOCIATED WITH A MEMBER OF A LIBRARY OF EXECUTABLE CODE FOR PERFORMING A PORTION OF AN AUTOMATIC TEST PROCEDURE
202
GENERATE A SCRIPTED TEST PLAN IN A CONVERSATIONAL LANGUAGE FROM THE SOURCE FILE
204
GENERATE AN AUTOMATED TEST CODE FOR THE AUTOMATED TEST PROCEDURE FROM THE SOURCE FILE
206
END

FIG. 2

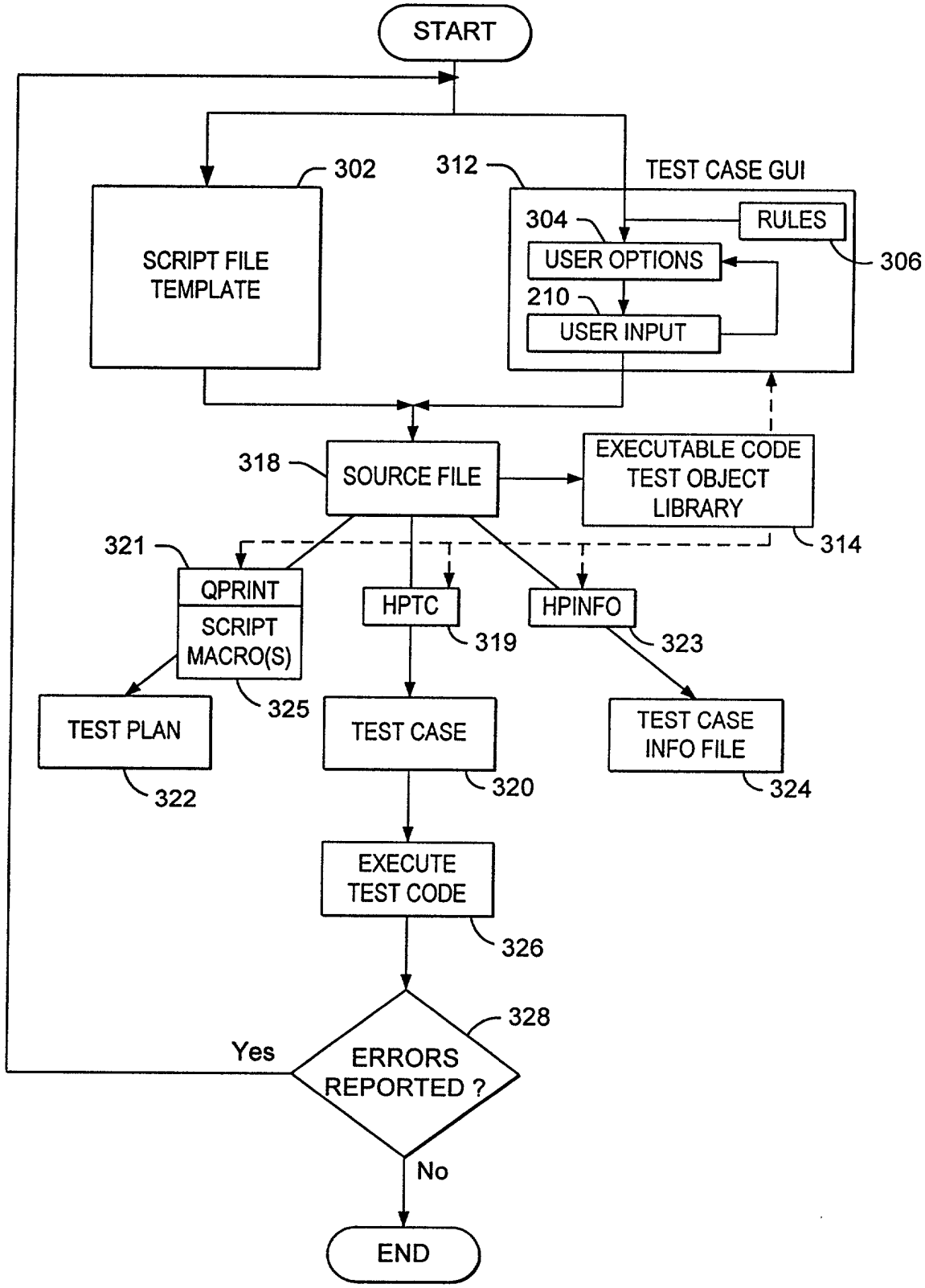
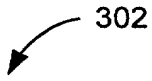

START
302
SCRIPT FILE TEMPLATE
312
TEST CASE GUI
304
RULES
306
USER OPTIONS
210
USER INPUT
318
SOURCE FILE
EXECUTABLE CODE TEST OBJECT LIBRARY
314
321
QPRINT
SCRIPT MACRO(S)
325
HPTC
319
HPINFO
323
TEST PLAN
322
TEST CASE
320
TEST CASE INFO FILE
324
EXECUTE TEST CODE
326
328
Yes
ERRORS REPORTED ?
No
END

FIG. 3




```
:H3.SMQA0 1 -9 1 IMS/CQS, non-response mode trans
:hppartc tc= 'SMQA0 1 -9'
*****************************************************************
:
402 :h4.Objectives
404 :p.The purpose of the test is entered here.
406 :h4.Scenario
408 :ol compact.
410 :li.The test scenario is entered here
412 :eol.
414 :h4.Procedure
416 :ol compact.
418 :li.Insert IT2 procedures here
420 :eol.
422 :h4.Verification
424 :ol compact.
426 :li.Testcase is self-verifying.
428 :eol.
430 :h4.System Configuration
432 :ol compact.
434 :li.This test case uses configuration___.
436 :eol.
438 :h4.Parts used by Test Case
440 :insert parts used by Test Case
442 :hpauthor aname= Insert author name
```

FIG. 4

500

```
:H3.SMQA0 1 -9 1 IMS/CQS, non-response mode trans
:hppartc tc= 'SMQA0 1 -9'
*********************************************************************************
:h4.Objectives
:p.The purpose of the test is to validate that transactions can be processed
on the Shared Message Queue. This test case will queue up non-response
mode transactions on the queue and process them.
:h4.Scenario
:ol compact.
:li.Start up a 1-way SYSPLEX with 1 Coupling Facility
:li.Initialize the RECONS and Load the DA Data Base share level 3
:li.Start IRLM 2.1
:il.Cold start 1 IMS/CQS.
:li.Submit 1000 non-response mode transactions
:li.Start application program
:li.Submit another 500 non-response mode transactions
:li.Shutdown IMS after work is processed
:eol.
:h4.Procedure
:ol compact.
:li.Insert IT2 procedures here
:eol.
:h4.Verification
:ol compact.
:li.Testcase is self-verifying.
:eol.
:h4.System Configuration
:ol compact.
:li.This test case uses configuration 30.
:eol.
:h4.Parts used by Test Case
:hppartp
:hpauthor aname= 'Tom Pavela'
```

502

504

FIG. 5

```
:H3.SMQA0 1 -9 1 IMS/CQS, non-response mode trans
:hppartc tc= 'SMQA0 1 -9'
*********************************************************************************
:h4.Objectives
:p.The purpose of this test is to validate that transactions can be processed
on the Shared Message Queue. This test case will queue up non-response
mode transactions on the queue and process them.
:h4.Scenario
:ol compact.
:li.Start up a 1-way SYSPLEX with 1 Coupling Facility
:li.Initialize the RECONS and Load the DJK Data Base share level 3
:li.Start IRLM 2.1
:il.Cold start 1 IMS/CQS.
:li.Submit 1000 non-response mode transactions
:li.Start application program
:li.Submit another 500 non-response mode transactions
:li.Shutdown IMS after work is processed
:eol.
:h4.Procedure
:ol compact.
602A ~:HPENTRY     CONFIG=30 ~ 602B
604A ~:HPLOAD      DB='DJK' SHRL=3 ~ 604B
606A ~:HPSRLM2     ON=ALL ~ 606B
608A ~:IMSSTART    ON=ALL DB='DJK' RE=NRE ~ 608B
                   CFNAMES1 ='CFNAMES,CFIRLM=LT01,CFVSAM=,CFOSAM=OSAMSESXI'
610A ~:TMSCNTI     ON=ALL NTRANS=1000 ~ 610B
612A ~:TMSCNTI     ON=ALL NTRANS=500 ~ 612B
614A ~:IMSSTOP     ON=ALL ~ 614B
616A ~:HPEXIT ~ 616B
:eol.
:h4.Verification
:ol compact.
:li.Testcase is self-verifying.
:eol.
:h4.System Configuration
:ul compact.
:li.This test case uses configuraton 30.
:eul.
:h4.Parts used by Test Case
:hppartp
:hpauthor aname= 'Tom Pavela'
```

FIG. 6

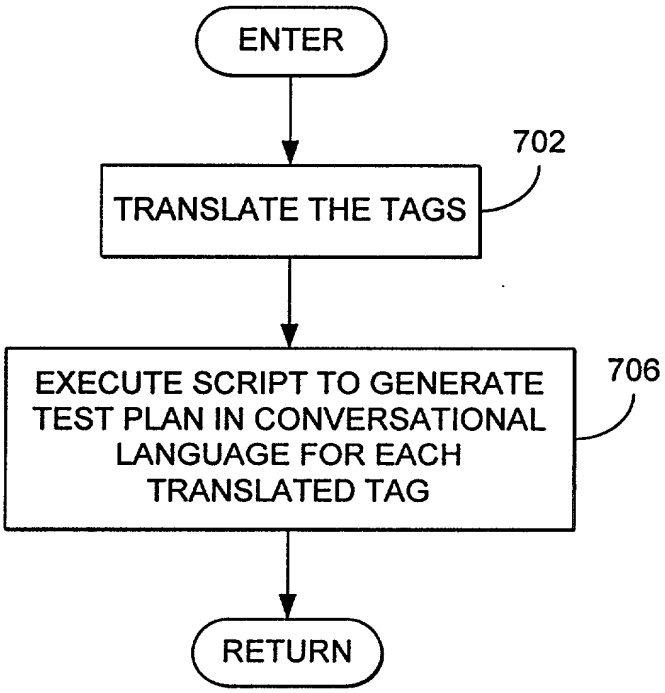

ENTER
702
TRANSLATE THE TAGS
706
EXECUTE SCRIPT TO GENERATE TEST PLAN IN CONVERSATIONAL LANGUAGE FOR EACH TRANSLATED TAG
RETURN

FIG. 7

SMQA0 1 -9 1 IMS/CQS, NON-RESPONSE MODE TRANS

Objectives

The purpose of this test is to validate that transactions can be processed on the Shared Message Queue. This test case will queue up non-response mode transactions on the queue and process them.

Scenario

1. Start up a 1-way SYSPLEX with 1 Coupling Facility
2. Initialize the RECONS and Load the DJK Data Base share level 3
3. Start IRLM 2.1
4. Cold start 1 IMS/CQS.
5. Submit 1000 non-response mode transactions
6. Start application program
7. Submit another 500 non-response mode transactions
8. Shutdown IMS after work is processed

Procedure

1. Call Hpcs_entry using configuration 30 and ARM= NO and ARCDEFLT= YES and RECVTAM= YES
2. Call Hpcs_load_databases which will:
    a. Define the shared RECON data sets
    b. Run the load database job(s) to load database(s) DJK and register the data bases as share level -3
3. Call Hpcs_Start_IRLMs_21 which will:
    a. Start IRLM 2.1 on all CECS with a lock structure of LT01
4. Call Start_IMS_on_all_systems which will:
    a. Run HPC$SPEC MODEL to update the VSPEC member on all CECs with (CFNAMES,CFIRLM=LT01,CFVSAM=,CFOSAM=OSAMSESXI)
    b. Run IMS%CSA% MVSPROC to bring up IMS TM/DB region on all CECs with CQS using VCATSHR.
    c. After DFS810A message is displayed, issue "/NRE CHKPT 0 FORMAT ALL." Wait for cold start to complete.
        1) Issue IMS command "/STOP DB DBHDOJ01"
        2) Issue IMS command "/STOP DB DBHDOK01"
        3) Issue IMS command "/START DB DBHDOJ01 ACCESS=UP"
        4) Issue IMS command "/START DB DBHDOK01 ACCESS=UP"

FIG. 8A

5. Call Start_Transaction_Scenario_1 which will:
    a. Submit 1000 non-response mode transactions (HPCSTCL1) on all CECs
    b. Issue the IMS / START PROGRAM HPCM00 command on all CECs
    c. Wait for all Scenario 1 transactions to be processed, then verify the transaction counter is correct.
6. Call Start_Transaction_Scenario_ 1 which will:
    a. Submit 500 non-response mode transactions (HPCSTCL1) on all CECs
    b. Issue the IMS / START PROGRAM HPCM00 command on all CECs
    c. Wait for all Scenario 1 transactions to be processed, then verify the transaction counter is correct.
7. Call Stop_all_IMSs which will:
    a. Issue a "/CHE FREEZE" to bring down the IMS control region on all CECs
    b. When IMS control region on all CECs completes, verify all condition codes to be zero.
    c. In Shared Queues configurations when CQS region on all CECs completes, verify all condition codes to be zero.
8. Call Hpcs_Exit routine

Verification

1. Testcase is self-verifying.

System Configuration

- This test case uses configuration 30.

Parts used by Test Case

CFCPLOAD PROCEDURE
RCN%CSA% PROCEDURE
HPC$L05 MODEL
LOADDJK PROCEDURE
IRLME2N PROCEDURE
HPC$SPEC MODEL
IMS%CSA% PROCEDURE
SMQ$C19X MVSPROC
SMQ$BMP JCL
HPC$TPNS MODEL
HPC$MPP MODEL
HPC$JOB EXEC

Author: Tom Pavela

FIG. 8B

```
/*************************************************************************************** */
/*SMQA0 1 -9 1 IMS/CQS, non-response mode trans                                          */
/*************************************************************************************** */
/*                                                                                       */
/*  Objectives                                                                           */
/*                                                                                       */
/*     The purpose of this test is to validate that transactions can be                  */
/*     processed on the Shared Message Queue. This test case will queue                  */
/*     up non-response mode transactions on the queue and process them.                  */
/*                                                                                       */
/*  Scenario                                                                             */
/*                                                                                       */
/*          Start up a 1-way SYSPLEX with 1 Coupling Facility                            */
/*                                                                                       */
/*          Initialize the RECONS and Load the DJK Data Base share level                 */
/*          3                                                                            */
/*                                                                                       */
/*          Start IRLM 2.1                                                               */
/*                                                                                       */
/*          Cold start 1 IMS/CQS.                                                        */
/*                                                                                       */
/*          Submit 1000 non-response mode transactions                                   */
/*                                                                                       */
/*          Start application program                                                    */
/*                                                                                       */
/*          Submit another 500 non-response mode transactions                            */
/*                                                                                       */
/*          Shutdown IMS after work is processed                                         */
```

FIG. 9A

```
/*************************************************************************************** */
/* This TC requires that an EC machine be ipled and executing in a                      */
/* Parallel SYSPLEX Environment (with a Coupling Facility)                              */
/*=====================================================================                */
/*SECURITY                  : IBM INTERNAL USE ONLY                                     */
/*=====================================================================                */
/* TESTCASE NAME            : "SMQA01-9"                                                */
/*=====================================================================                */
/* SOURCE FILE              : "SMQA01-9 SCRIPT A1"                                      */
/*=====================================================================                */
/* LINE ITEM                : 1 IMS/CQS, non-response mode trans                        */
/*=====================================================================                */
 SESSION=SESSION
 GLOBAL  SetVars MoreHold DoReply DoWait TimeOut SwitchEC ATIRUN
 GLOBAL  MVSPROC ATIVER TransVer MVSCmd CPCmd GoCP LeaveCP GetPRTAll
 GLOBAL  ResetPorts DialPorts LogLine
 GLOBAL  DoWaitSwap ATISwap MVSCmdSwap
/*************************************************************************************** */
/* Hpcs subroutine library                                                              */
/*-------------------------------------------------------------------------------------- */
 GLOBAL CONFIGURATION      /*: determines #ECs & #CFs & struct location */
 GLOBAL DATABASES          /*: determines databases to load and access */
 GLOBAL CFNAMES1           /*: CFNAMES card #1 used by HPC$VSPEC */
 GLOBAL CFNAMES2           /*: CFNAMES card #2 used by HPC$VSPEC */
 GLOBAL OPTIONS            /*: IRLM 2.1 options (start_a_Irlm only)  */
 GLOBAL DBDLIST            /*: dbdlist at hpcs_entry                 */
 GLOBAL ACBLIB             /*: acblib at hpcs_entry, psb will be gened to */
 GLOBAL HPCLIST            /*: psblist at hpcs_entry                 */
 GLOBAL HPCSTRCE           /*: TRACE value while in HPC$SUB          */
/*----------------------------------Scenario variables----------------------------------*/
```

FIG. 9B

```
GLOBAL HPCSLOG          /*: LOG causes Scenario logging to OLDS          */
GLOBAL HPCSTRAN         /*: #trans to use in Scenario 1-350              */
                        /* Scenarios 4, 5 <176 else <351                 */
GLOBAL HPCSMPPS         /* The number of Mpps to be used by              */
                        /* database type, 1, 2 or 3 (def=3)              */
GLOBAL HPCSVER          /* ='Yes' verify environment, ='No', goto        */
                        /* check all messages processed loop             */
GLOBAL HYPER            /* Yes--use VSAM Hyper space                     */
GLOBAL SHARER           /* Yes--start 2nd IMS                            */
GLOBAL MODEL            /* Mvscmd model proc                             */
GLOBAL NUMPARTS         /* Number of Partitions                          */
GLOBAL RESLIB           /* IMS reslib                                    */
GLOBAL PARM1            /* IMS parm1                                     */
GLOBAL PARM2            /* IMS parm2                                     */
GLOBAL RESTART_VTAM     /* restart_vtam=yes/no for recycled vtam in entry */
GLOBAL VSPEC            /* IMS VSPEC                                     */
GLOBAL PROCNAME         /* IMS PROCNAME                                  */
GLOBAL CEC1_RESLIB      /* CEC1 RESLIB                                   */
GLOBAL CEC2_RESLIB      /* CEC2 RESLIB                                   */
GLOBAL CEC3_RESLIB      /* CEC3 RESLIB                                   */
GLOBAL Scenario2_log    /* TMSCNTX Scenario2 _Log                        */
GLOBAL Scenario3_log    /* TMSCNTX Scenario3 _Log                        */
GLOBAL Scenario4_log    /* TMSCNTX Scenario4 _Log                        */
GLOBAL Scenario5_log    /* TMSCNTX Scenario5 _Log                        */
GLOBAL Scenario6_log    /* TMSCNTX Scenario6 _Log                        */
GLOBAL Scenario7_log    /* TMSCNTX Scenario7 _Log                        */
GLOBAL Scenario8_log    /* TMSCNTX Scenario8 _Log                        */
GLOBAL Scenario9_log    /* TMSCNTX Scenario9 _Log                        */
GLOBAL ScenarioA_log    /* TMSCNTX ScenarioA _Log                        */
GLOBAL ScenarioB_log    /* TMSCNTX ScenarioB _Log                        */
GLOBAL ScenarioC_log    /* TMSCNTX ScenarioC _Log                        */
GLOBAL ScenarioD_log    /* TMSCNTX ScenarioD _Log                        */
GLOBAL ScenarioE_log    /* TMSCNTX ScenarioE _Log                        */
```

FIG. 9C

```
GLOBAL ScenarioF_log          /* TMSCNTX ScenarioF_Log                          */
GLOBAL ScenarioG_log          /* TMSCNTX ScenarioG_Log                          */
GLOBAL ScenarioH_log          /* TMSCNTX ScenarioH_Log                          */
GLOBAL Scenario I_log         /* TMSCNTX Scenario I_Log                         */
GLOBAL ScenarioJ_log          /* TMSCNTX ScenarioJ_Log                          */
GLOBAL ScenarioK_log          /* TMSCNTX ScenarioK_Log                          */
GLOBAL ScenarioL_log          /* TMSCNTX ScenarioL_Log                          */
GLOBAL CQSWTOR1               /* CQSWTOR1                                       */
GLOBAL ARCDEFLT               /* Archive member default                         */
GLOBAL NumofTerm_to_Use       /* Num of Terminal to use for Scenario 1-10       */
GLOBAL ARM                    /* ARM policy                                     */
GLOBAL ShareDB                /* Share DB YES-Global No-Local                   */
GLOBAL IMSLOCAL               /* Local IMS?                                     */
GLOBAL RSRMBR                 /* RSRMBR RSR Member                              */
GLOBAL DELSLDS                /* DELSLDS Delete SLDS                            */
GLOBAL RLVL                   /* RLVL Readiness level                           */
GLOBAL HPCSFRCE               /* routine in HPC$CMD to cleanup structures       */
/*************************************************************************************************/
/*-----------------------------------------Called Commands-------------------------------------*/
GLOBAL  SwitchEC
GLOBAL  Hpcs_entry
GLOBAL  Hpcs_load_databases
GLOBAL  Hpcs_Start_IRLMs_21
GLOBAL  Start_IMS_on_all_systems
GLOBAL  Start_Tran_Scenario_1
GLOBAL  Stop_all_IMSs
GLOBAL  Hpcs_exit
GLOBAL  Hpcs_clear
GLOBAL  Hpcs_clear_all
GLOBAL  Hpcs_logit
```

FIG. 9D

```
/*=======================begin test case========================== */
/*----------------------------------->>> EC1 <<<------------------------------------- */
Call SwitchEC "EC1"
CONFIGURATION=30
RESTART_VTAM="YES"
ARCDEFLT="YES"
ARM="NO"
Call Hpcs_entry " "
/* load the database(s) using sharelevel 3                                          */
DATABASES=" DJK "
ShareDB="YES"
Call Hpcs_load_databases "3  "                                        910
Call Hpcs_Start_IRLMs_21 " "
/*************************************************************************************/
/* Cold start IMS TM_DB region on ALL system(s)                                     */
/* CQS will be started and the default model is SMQ$C19X.                           */
/* The following IMS parms will be used if they are not set by the                  */
/* user in IMSPARMS:                                                                */
/*       IRLM=Y, VSPEC=HP, IMSID=IMSx                                               */
/*       SHAREDQ=%%x, DC=COx                                                        */
/*              note: x is 1,2, or 3 depending on which CEC                         */
/*       DLINM=HPC%CSA%  (if DBDLIST or PSBLIST is specified in HPENTRY)            */
/*************************************************************************************/
CFNAMES1= 'CFNAMES, CFIRLM=LT01, CFVSAM=, CFOSAM=OSAMSESXI'
CFNAMES2="NO"
DATABASES=" DJK "
SHARER="NO"
HYPER="NO"
IMSLOCAL="N"
RESLIB="C"
PROCNAME="DEFAULT"
PARM1=" "
PARM2=" "
VSPEC="DEFAULT"
MODEL="DEFAULT"
Call Start_IMS_on_all_systems
Call Start_Tran_Scenario_1 "LEAVE=NO NTRANS=1000 ON=ALL STARTAPL=ALL"
Call Start_Tran_Scenario_1 "LEAVE=NO NTRANS=500 ON=ALL STARTAPL=ALL"
        Call Stop_all_IMSs "     "
Call Hpcs_exit " "
/*=======================end test case============================ */
EXIT 0
INCLUDE "HPC$SUB"
/*===================HPTC Translation summary=================== */
/* Number of lines written  = ...176                                               */
/* Number of +++ errors     = .....0                                               */
/*====================End Translation summary=================== */
```

FIG. 9E

US 6,560,564 B2

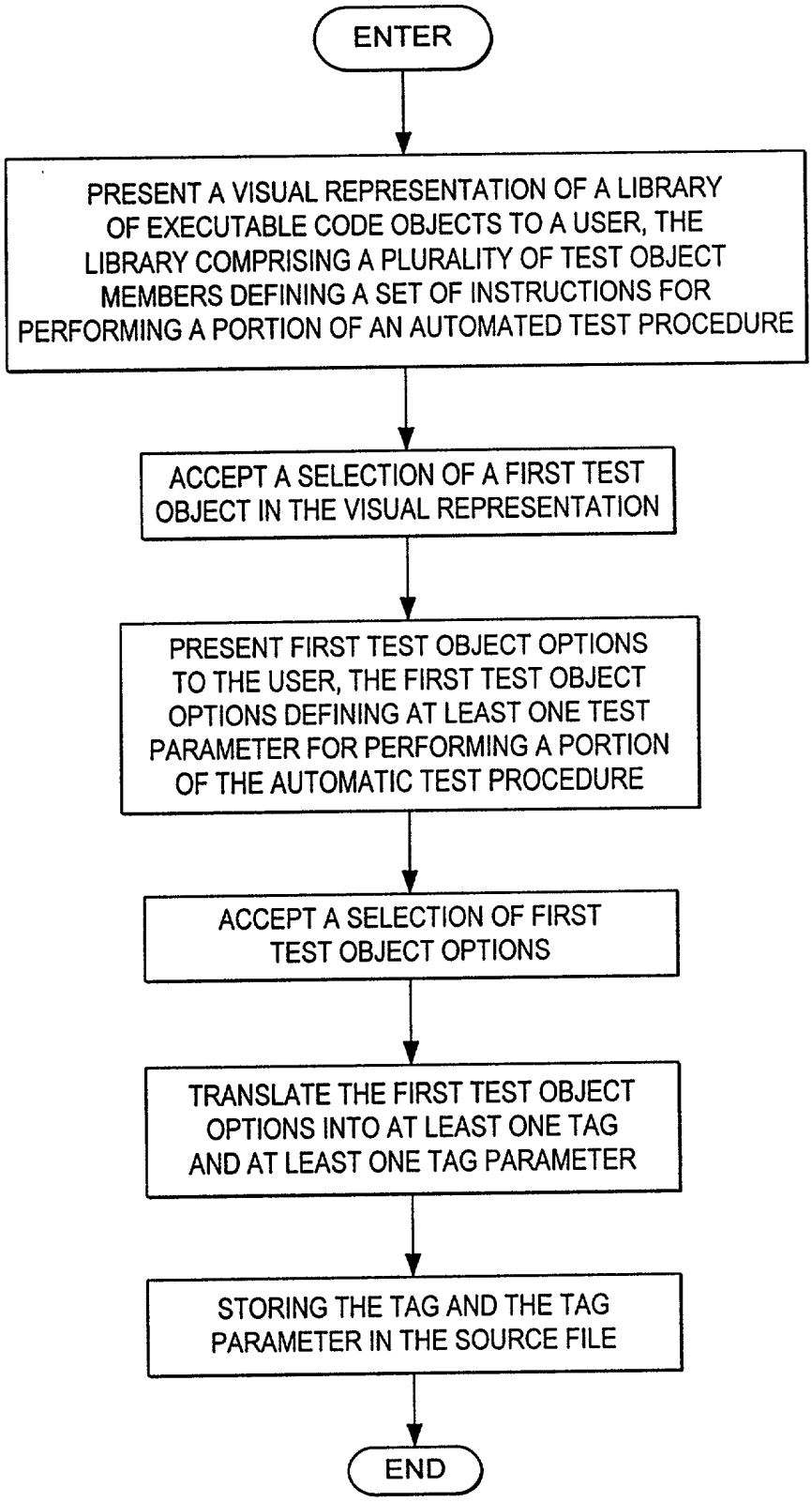

ENTER
PRESENT A VISUAL REPRESENTATION OF A LIBRARY OF EXECUTABLE CODE OBJECTS TO A USER, THE LIBRARY COMPRISING A PLURALITY OF TEST OBJECT MEMBERS DEFINING A SET OF INSTRUCTIONS FOR PERFORMING A PORTION OF AN AUTOMATED TEST PROCEDURE
ACCEPT A SELECTION OF A FIRST TEST OBJECT IN THE VISUAL REPRESENTATION
PRESENT FIRST TEST OBJECT OPTIONS TO THE USER, THE FIRST TEST OBJECT OPTIONS DEFINING AT LEAST ONE TEST PARAMETER FOR PERFORMING A PORTION OF THE AUTOMATIC TEST PROCEDURE
ACCEPT A SELECTION OF FIRST TEST OBJECT OPTIONS
TRANSLATE THE FIRST TEST OBJECT OPTIONS INTO AT LEAST ONE TAG AND AT LEAST ONE TAG PARAMETER
STORING THE TAG AND THE TAG PARAMETER IN THE SOURCE FILE
END

FIG. 10

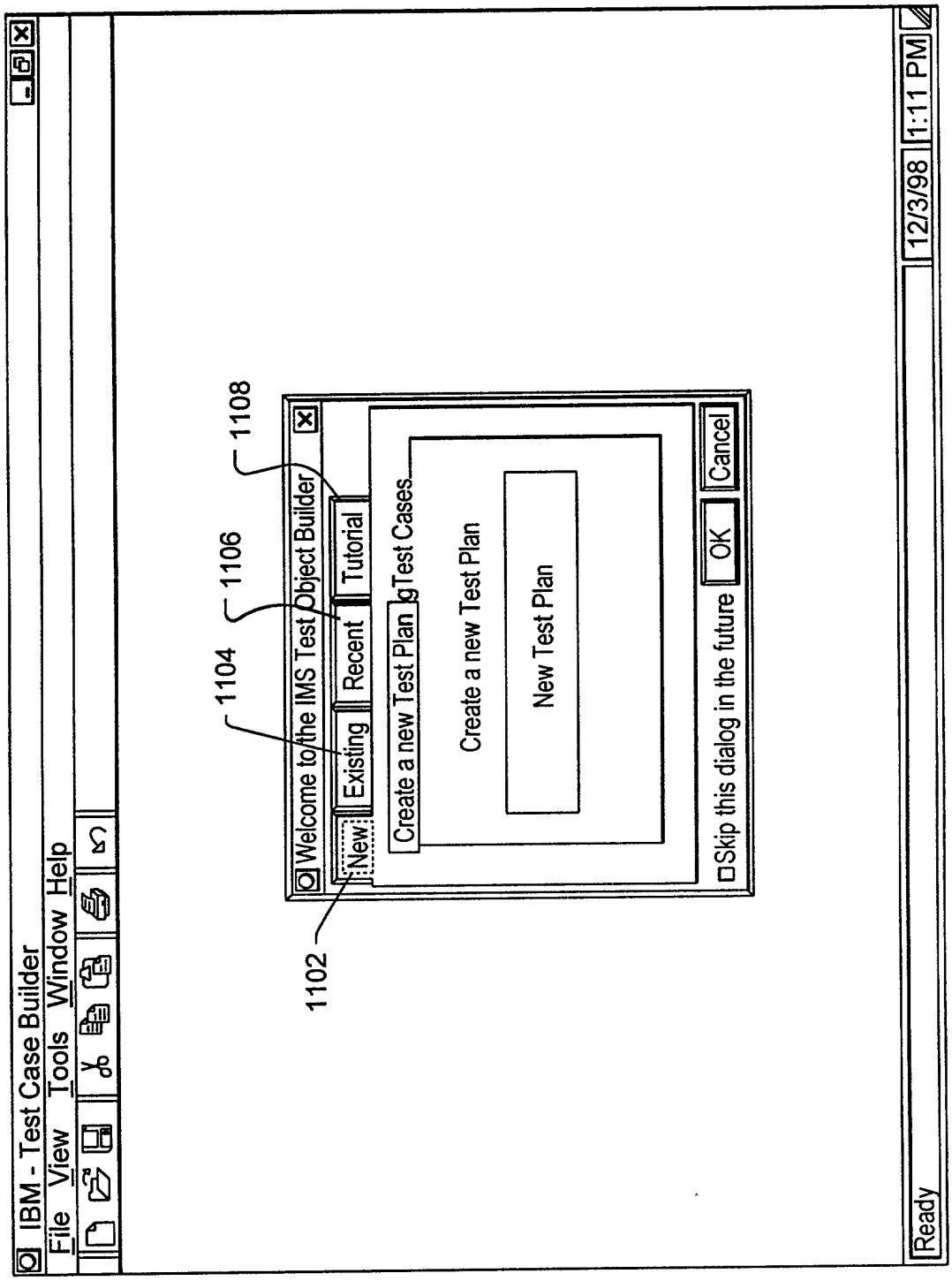

IBM - Test Case Builder
File View Tools Window Help
Welcome to the IMS Test Object Builder
New
Existing
Recent
Tutorial
Create a new Test Plan
Test Cases
Create a new Test Plan
New Test Plan
Skip this dialog in the future
OK
Cancel
Ready
12/3/98
1:11 PM
1102
1104
1106
1108

FIG. 11

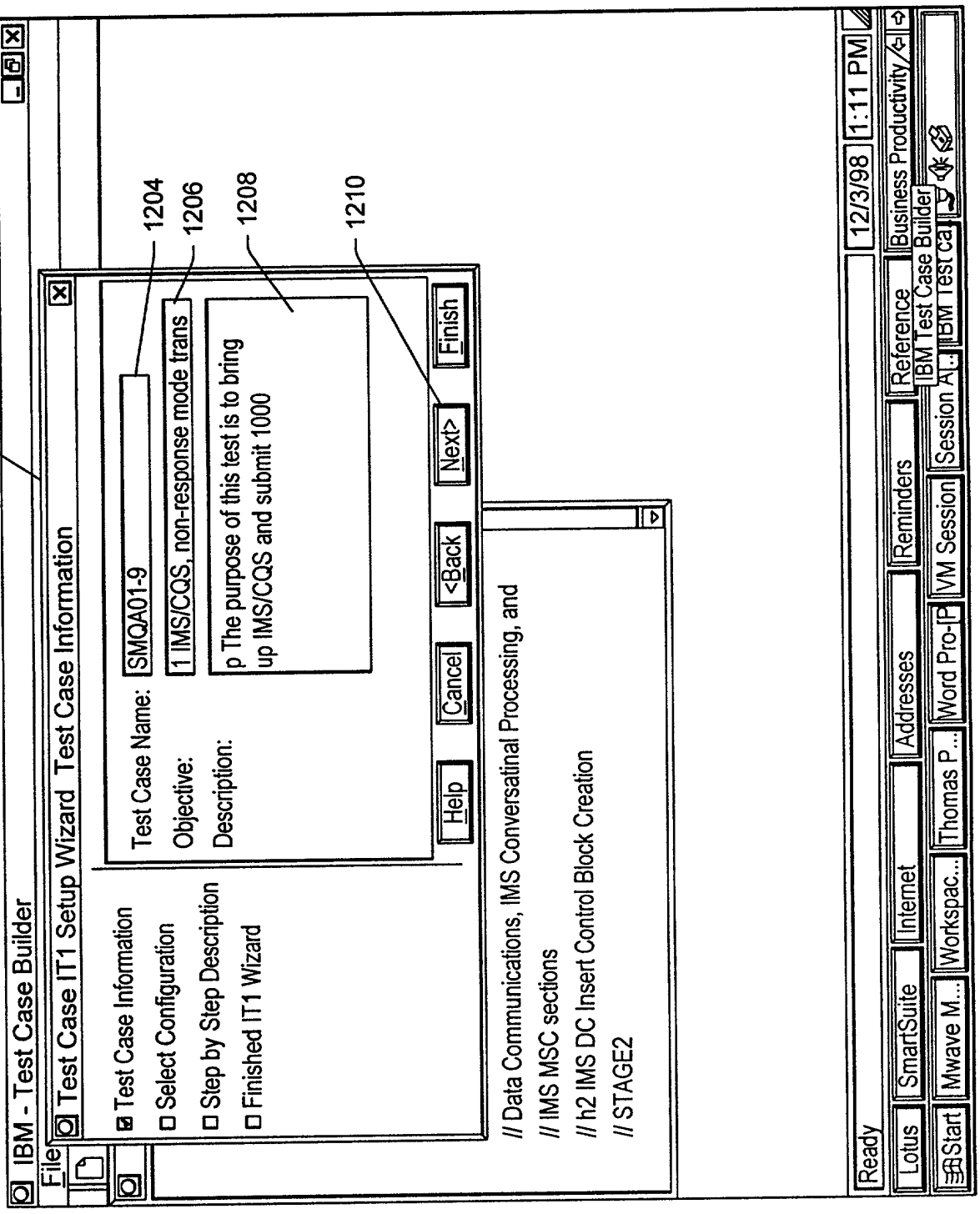

1202
IBM - Test Case Builder
File
Test Case IT1 Setup Wizard Test Case Information
Test Case Information
Select Configuration
Step by Step Description
Finished IT1 Wizard
Test Case Name:
SMQA01-9
Objective:
1 IMS/CQS, non-response mode trans
Description:
p The purpose of this test is to bring up IMS/CQS and submit 1000
1204
1206
1208
1210
Help
Cancel
<Back
Next>
Finish
// Data Communications, IMS Conversatinal Processing, and
// IMS MSC sections
// h2 IMS DC Insert Control Block Creation
// STAGE2
Ready
12/3/98
1:11 PM
Start
Lotus
SmartSuite
Internet
Addresses
Reminders
Reference
Business Productivity
Mwave M...
Workspac...
Thomas P...
Word Pro-IP
VM Session
Session A...
IBM Test Case Builder
IBM Test ca

FIG. 12

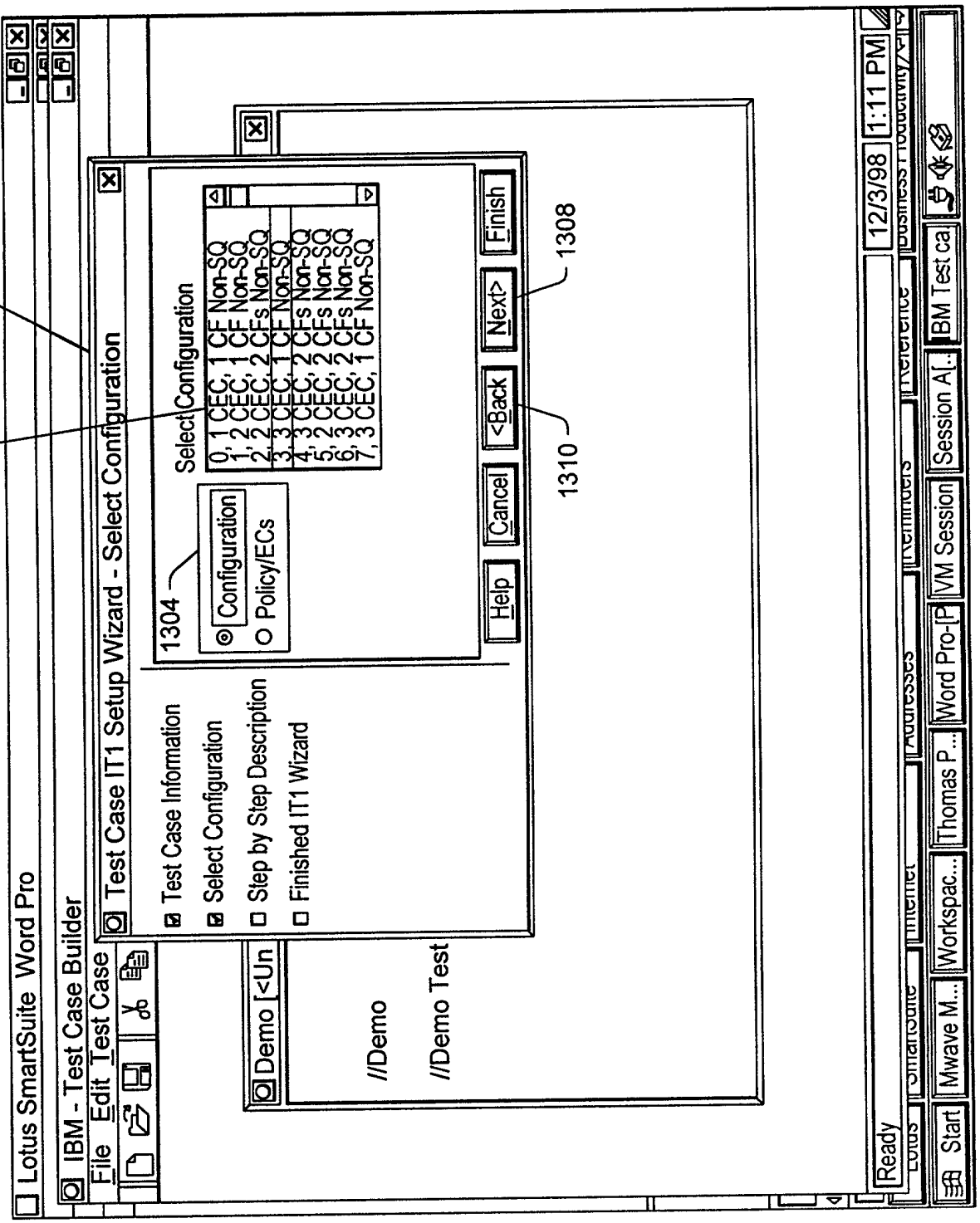

Lotus SmartSuite Word Pro
IBM - Test Case Builder
File Edit Test Case
Test Case IT1 Setup Wizard - Select Configuration
Test Case Information
Select Configuration
Step by Step Description
Finished IT1 Wizard
1304
Configuration
Policy/ECs
Select Configuration
0, 1 CEC, 1 CF Non-SQ
1, 2 CEC, 1 CF Non-SQ
2, 2 CEC, 2 CFs Non-SQ
3, 3 CEC, 1 CF Non-SQ
4, 3 CEC, 2 CFs Non-SQ
5, 2 CEC, 2 CFs Non-SQ
6, 3 CEC, 2 CFs Non-SQ
7, 3 CEC, 1 CF Non-SQ
Help
Cancel
<Back
Next>
Finish
1306
1308
1310
1302
Demo [<Un
//Demo
//Demo Test
Ready
Start
Mwave M...
Workspac...
Thomas P...
Word Pro-[P
VM Session
Session A[..
BM Test ca
12/3/98
1:11 PM

FIG. 13

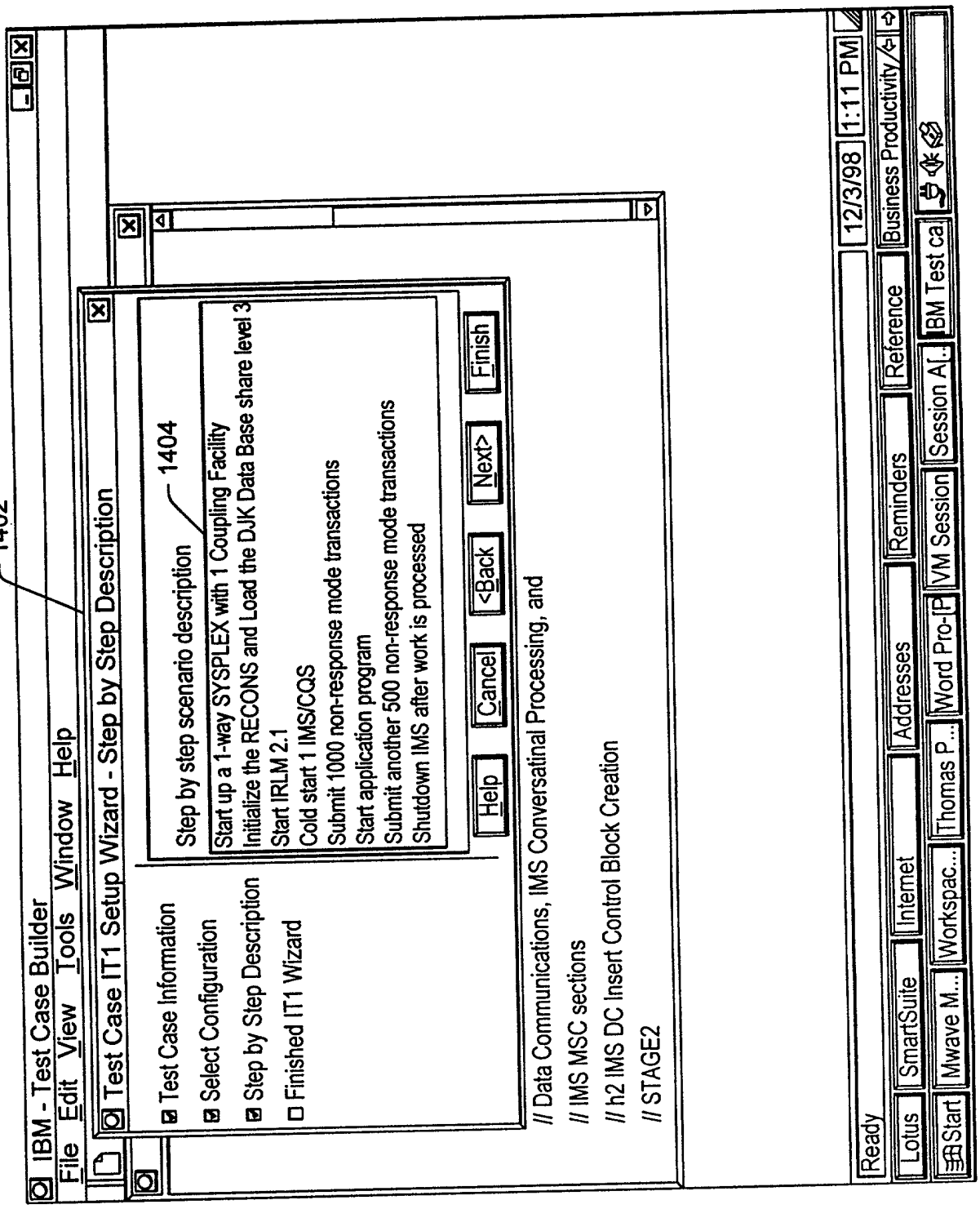

1402
IBM - Test Case Builder
File Edit View Tools Window Help
Test Case IT1 Setup Wizard - Step by Step Description
Test Case Information
Select Configuration
Step by Step Description
Finished IT1 Wizard
Step by step scenario description
1404
Start up a 1-way SYSPLEX with 1 Coupling Facility
Initialize the RECONS and Load the DJK Data Base share level 3
Start IRLM 2.1
Cold start 1 IMS/CQS
Submit 1000 non-response mode transactions
Start application program
Submit another 500 non-response mode transactions
Shutdown IMS after work is processed
Help
Cancel
<Back
Next>
Finish
// Data Communications, IMS Conversatinal Processing, and
// IMS MSC sections
// h2 IMS DC Insert Control Block Creation
// STAGE2
Ready
12/3/98
1:11 PM
Lotus
SmartSuite
Internet
Addresses
Reminders
Reference
Business Productivity
Start
Mwave M...
Workspac...
Thomas P...
Word Pro-[P
VM Session
Session A[..
BM Test ca

FIG. 14

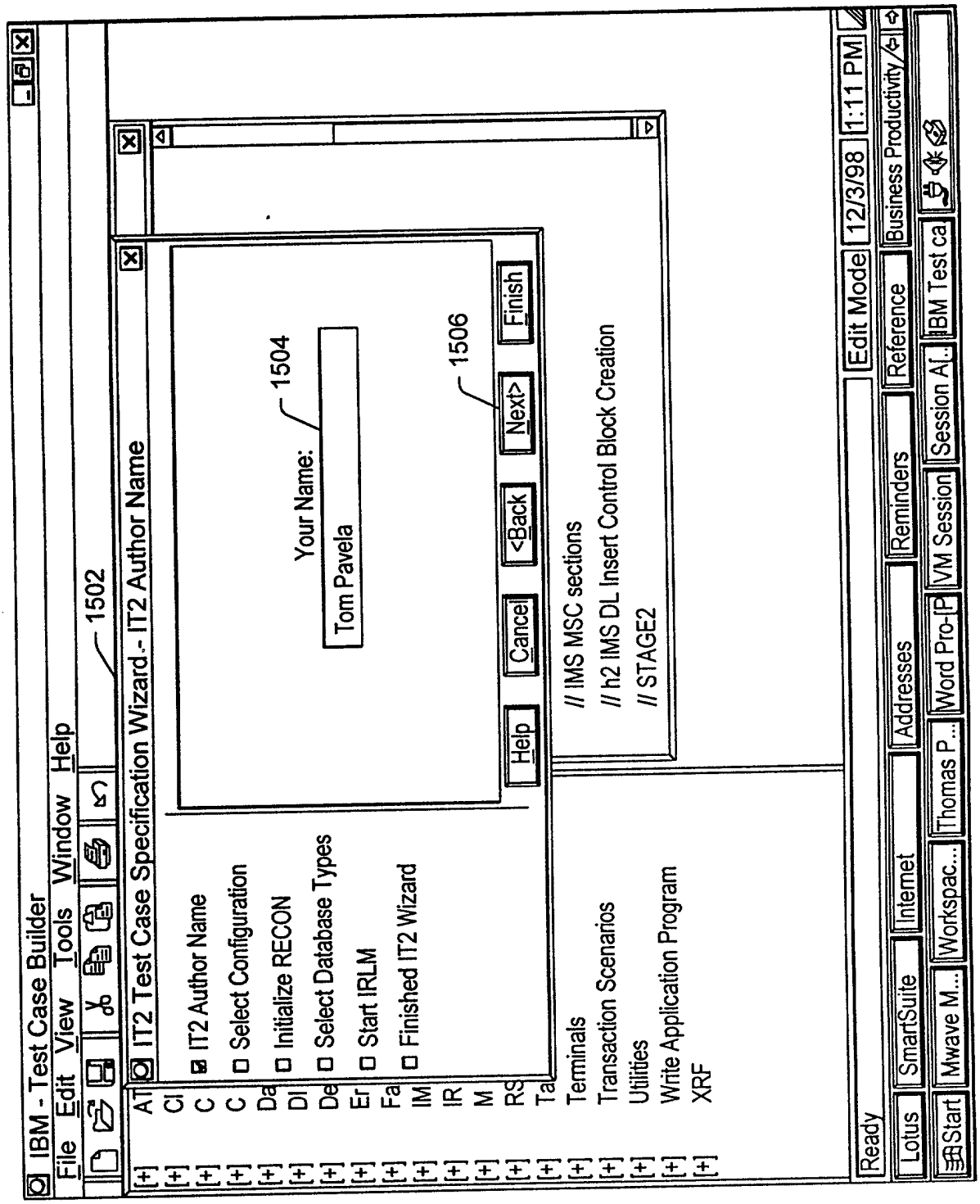

IBM - Test Case Builder
File Edit View Tools Window Help
1502
IT2 Test Case Specification Wizard.- IT2 Author Name
IT2 Author Name
Select Configuration
Initialize RECON
Select Database Types
Start IRLM
Finished IT2 Wizard
Your Name:
1504
Tom Pavela
1506
Help
Cancel
<Back
Next>
Finish
// IMS MSC sections
// h2 IMS DL Insert Control Block Creation
// STAGE2
Terminals
Transaction Scenarios
Utilities
Write Application Program
XRF
Ready
Edit Mode
12/3/98
1:11 PM
Lotus SmartSuite
Internet
Addresses
Reminders
Reference
Business Productivity
Start
Mwave M...
Workspac...
Thomas P...
Word Pro-[P
VM Session
Session Al..
IBM Test ca

FIG. 15

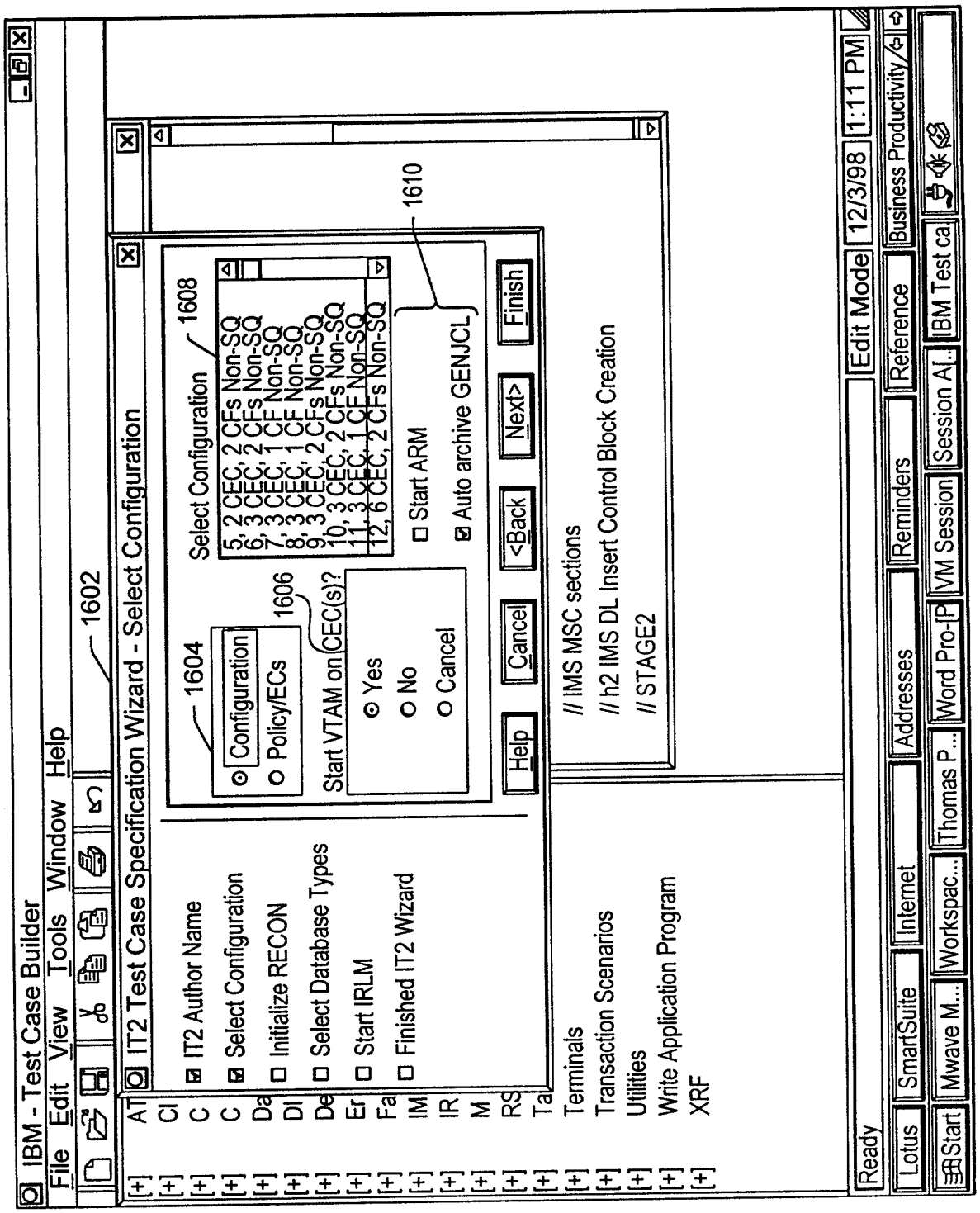

IBM - Test Case Builder
File Edit View Tools Window Help
1602
IT2 Test Case Specification Wizard - Select Configuration
1604
Configuration
Policy/ECs
1606
Start VTAM on CEC(s)?
Yes
No
Cancel
Select Configuration
1608
5, 2 CEC, 2 CFs Non-SQ
6, 3 CEC, 2 CFs Non-SQ
7, 3 CEC, 1 CF Non-SQ
8, 3 CEC, 1 CF Non-SQ
9, 3 CEC, 2 CFs Non-SQ
10, 3 CEC, 2 CFs Non-SQ
11, 3 CEC, 1 CF Non-SQ
12, 6 CEC, 2 CFs Non-SQ
1610
Start ARM
Auto archive GENJCL
Help
Cancel
<Back
Next>
Finish
IT2 Author Name
Select Configuration
Initialize RECON
Select Database Types
Start IRLM
Finished IT2 Wizard
Terminals
Transaction Scenarios
Utilities
Write Application Program
XRF
// IMS MSC sections
// h2 IMS DL Insert Control Block Creation
// STAGE2
Ready
Edit Mode
12/3/98
1:11 PM
Lotus
SmartSuite
Internet
Addresses
Reminders
Reference
Business Productivity
Start
Mwave M...
Workspac...
Thomas P...
Word Pro-[P
VM Session
Session A[...
IBM Test ca

FIG. 16

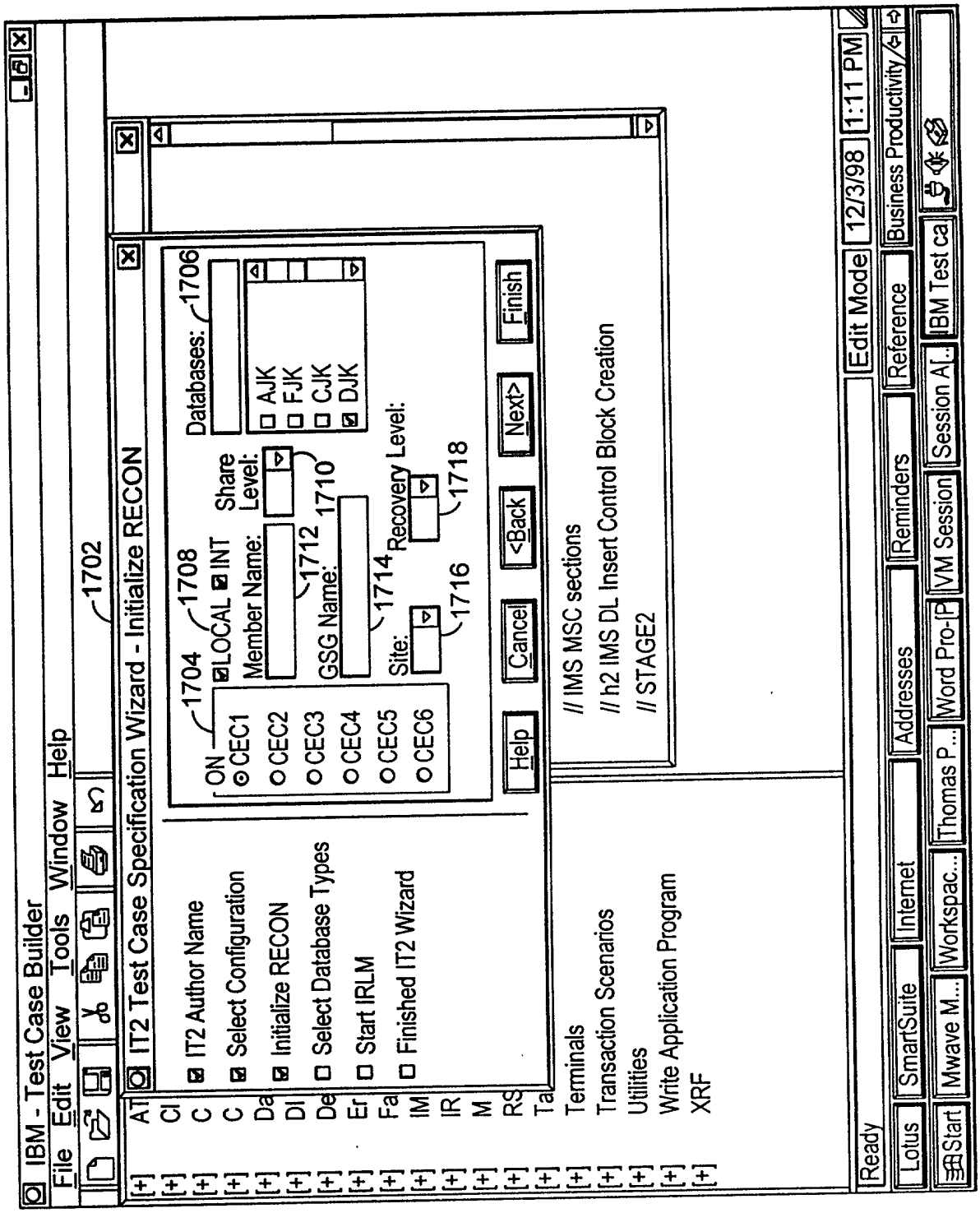

IBM - Test Case Builder
File Edit View Tools Window Help
1702
IT2 Test Case Specification Wizard - Initialize RECON
IT2 Author Name
Select Configuration
Initialize RECON
Select Database Types
Start IRLM
Finished IT2 Wizard
1704
ON
CEC1
CEC2
CEC3
CEC4
CEC5
CEC6
1708
LOCAL
INT
Member Name:
1712
GSG Name:
1714
Site:
1716
Share Level:
1710
Recovery Level:
1718
Databases:
1706
AJK
FJK
CJK
DJK
Help
Cancel
<Back
Next>
Finish
Terminals
Transaction Scenarios
Utilities
Write Application Program
XRF
// IMS MSC sections
// h2 IMS DL Insert Control Block Creation
// STAGE2
Ready
Edit Mode
12/3/98
1:11 PM
Lotus
SmartSuite
Internet
Addresses
Reminders
Reference
Business Productivity
Start
Mwave M...
Workspac...
Thomas P...
Word Pro-P...
VM Session
Session A...
IBM Test ca

FIG. 17

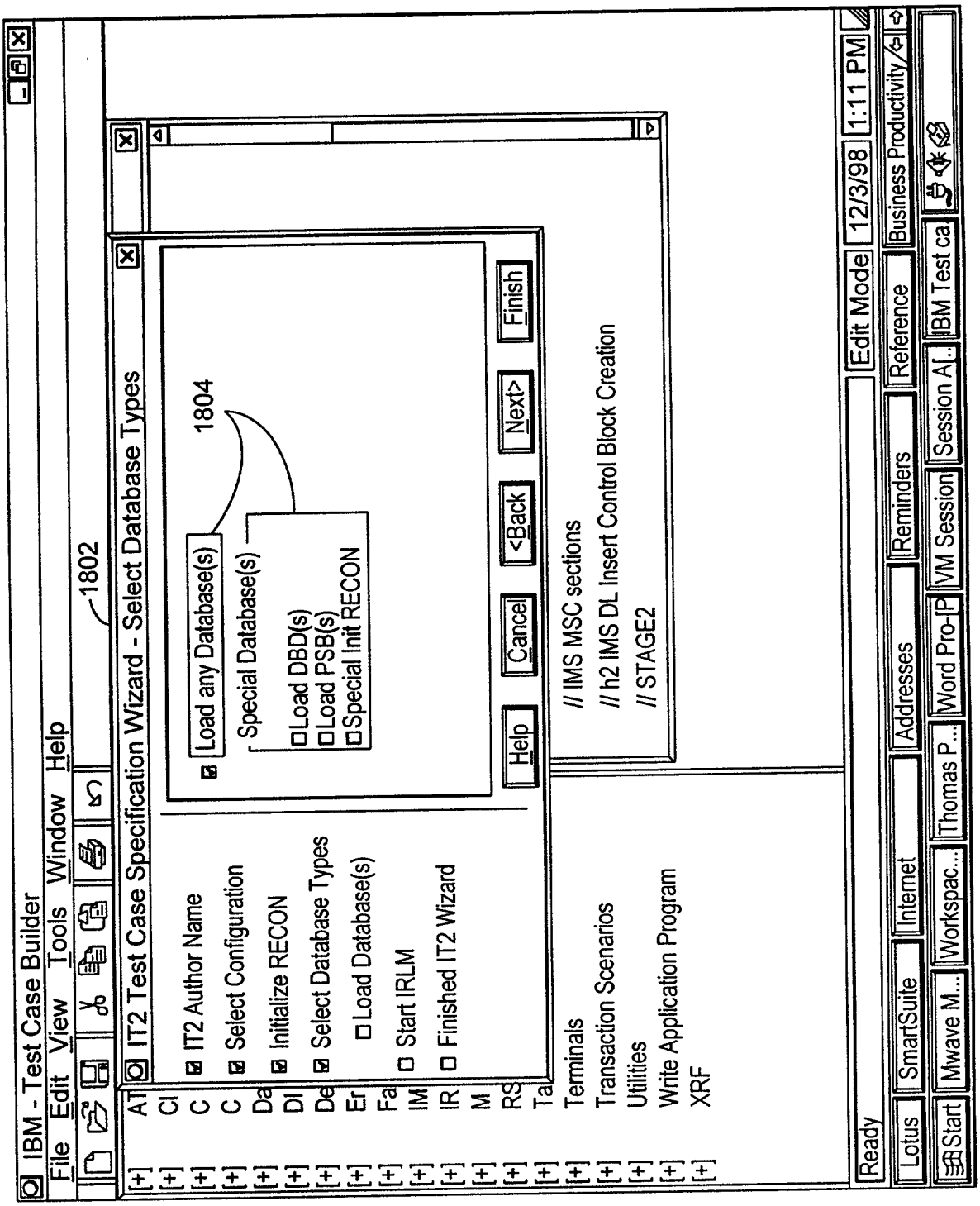

IBM - Test Case Builder
File Edit View Tools Window Help
1802
IT2 Test Case Specification Wizard - Select Database Types
IT2 Author Name
Select Configuration
Initialize RECON
Select Database Types
Load Database(s)
Start IRLM
Finished IT2 Wizard
Load any Database(s)
1804
Special Database(s)
Load DBD(s)
Load PSB(s)
Special Init RECON
Help
Cancel
<Back
Next>
Finish
Terminals
Transaction Scenarios
Utilities
Write Application Program
XRF
// IMS MSC sections
// h2 IMS DL Insert Control Block Creation
// STAGE2
Ready
Edit Mode
12/3/98
1:11 PM
Lotus
SmartSuite
Internet
Addresses
Reminders
Reference
Business Productivity
Start
Mwave M...
Workspac...
Thomas P...
Word Pro-[P
VM Session
Session Al...
BM Test ca

FIG. 18

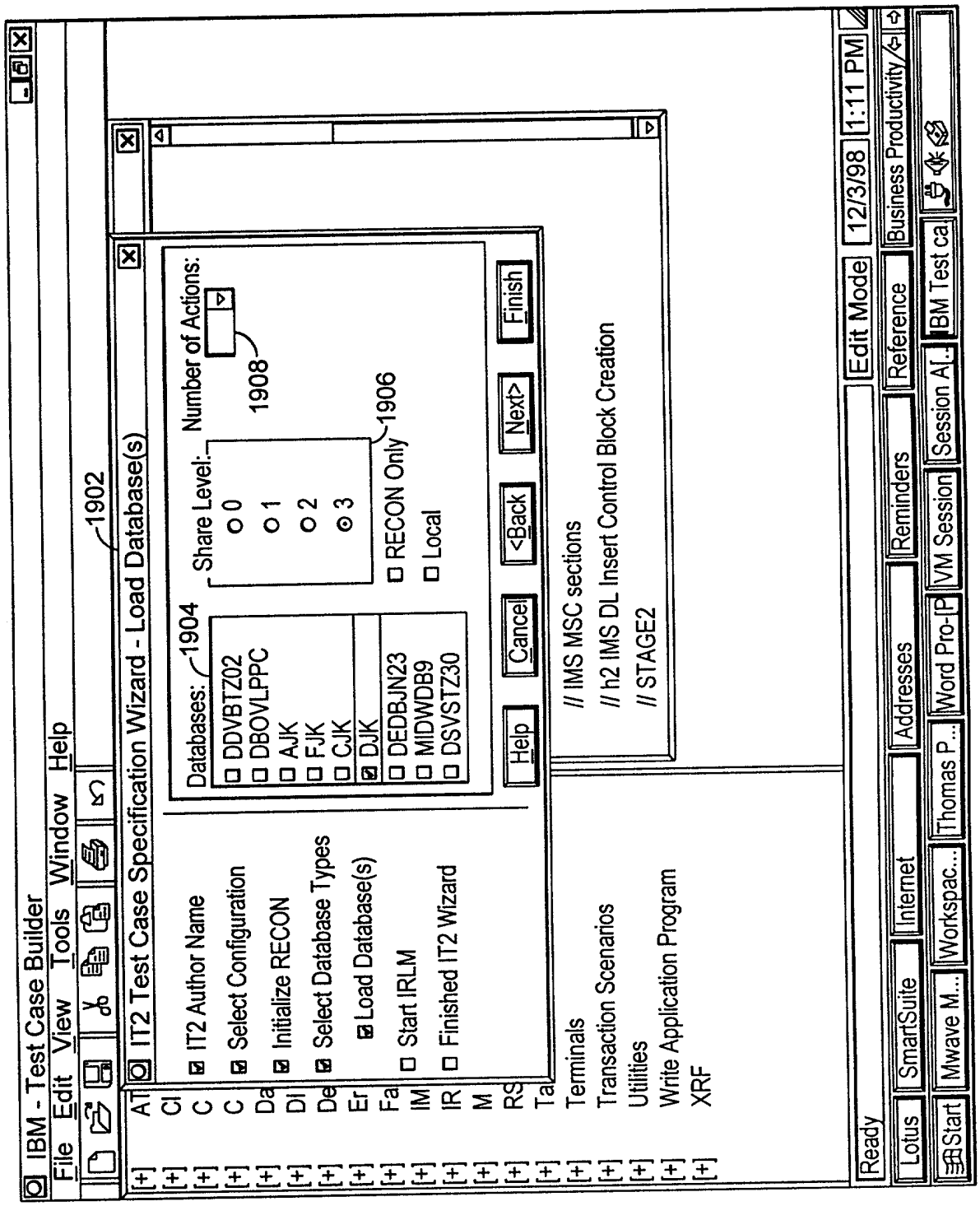

IBM - Test Case Builder
File Edit View Tools Window Help
1902
IT2 Test Case Specification Wizard - Load Database(s)
IT2 Author Name
Select Configuration
Initialize RECON
Select Database Types
Load Database(s)
Start IRLM
Finished IT2 Wizard
Databases:
1904
DDVBTZ02
DBOVLPPC
AJK
FJK
CJK
DJK
DEDBJN23
MIDWDB9
DSVSTZ30
Share Level:
0
1
2
3
Number of Actions:
1908
1906
RECON Only
Local
Help
Cancel
<Back
Next>
Finish
// IMS MSC sections
// h2 IMS DL Insert Control Block Creation
// STAGE2
Terminals
Transaction Scenarios
Utilities
Write Application Program
XRF
Ready
Edit Mode
12/3/98
1:11 PM
Start
Lotus
SmartSuite
Internet
Addresses
Reminders
Reference
Business Productivity
Mwave M...
Workspac...
Thomas P...
Word Pro-IP
VM Session
Session Al...
IBM Test ca

FIG. 19

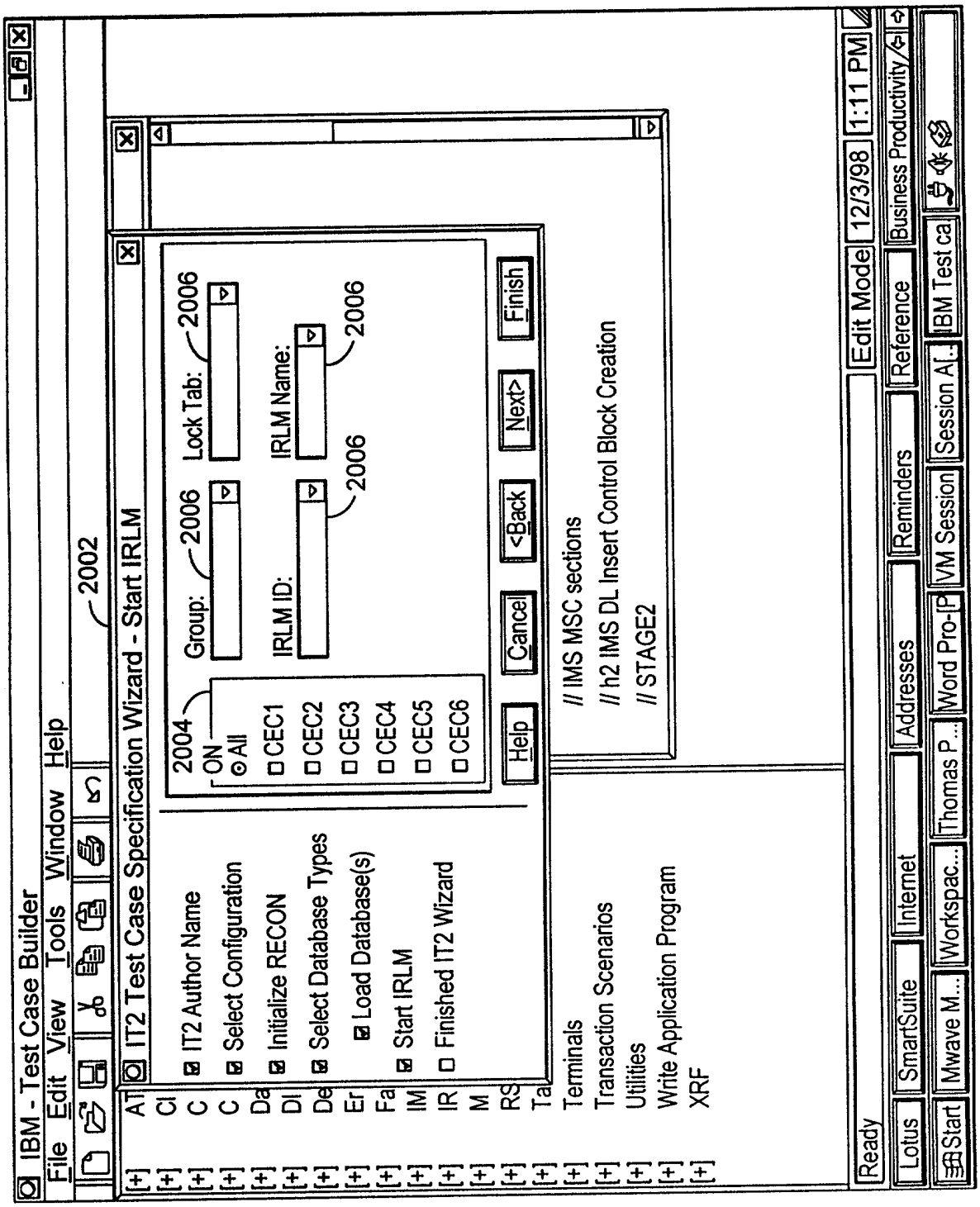

IBM - Test Case Builder
File Edit View Tools Window Help
2002
IT2 Test Case Specification Wizard - Start IRLM
IT2 Author Name
Select Configuration
Initialize RECON
Select Database Types
Load Database(s)
Start IRLM
Finished IT2 Wizard
2004
ON
All
CEC1
CEC2
CEC3
CEC4
CEC5
CEC6
Group:
2006
Lock Tab:
2006
IRLM ID:
2006
IRLM Name:
2006
Help
Cancel
<Back
Next>
Finish
// IMS MSC sections
// h2 IMS DL Insert Control Block Creation
// STAGE2
Terminals
Transaction Scenarios
Utilities
Write Application Program
XRF
Ready
Edit Mode
12/3/98
1:11 PM
Lotus
SmartSuite
Internet
Addresses
Reminders
Reference
Business Productivity
Start
Mwave M...
Workspac...
Thomas P...
Word Pro-IP
VM Session
Session Af...
IBM Test ca

FIG. 20

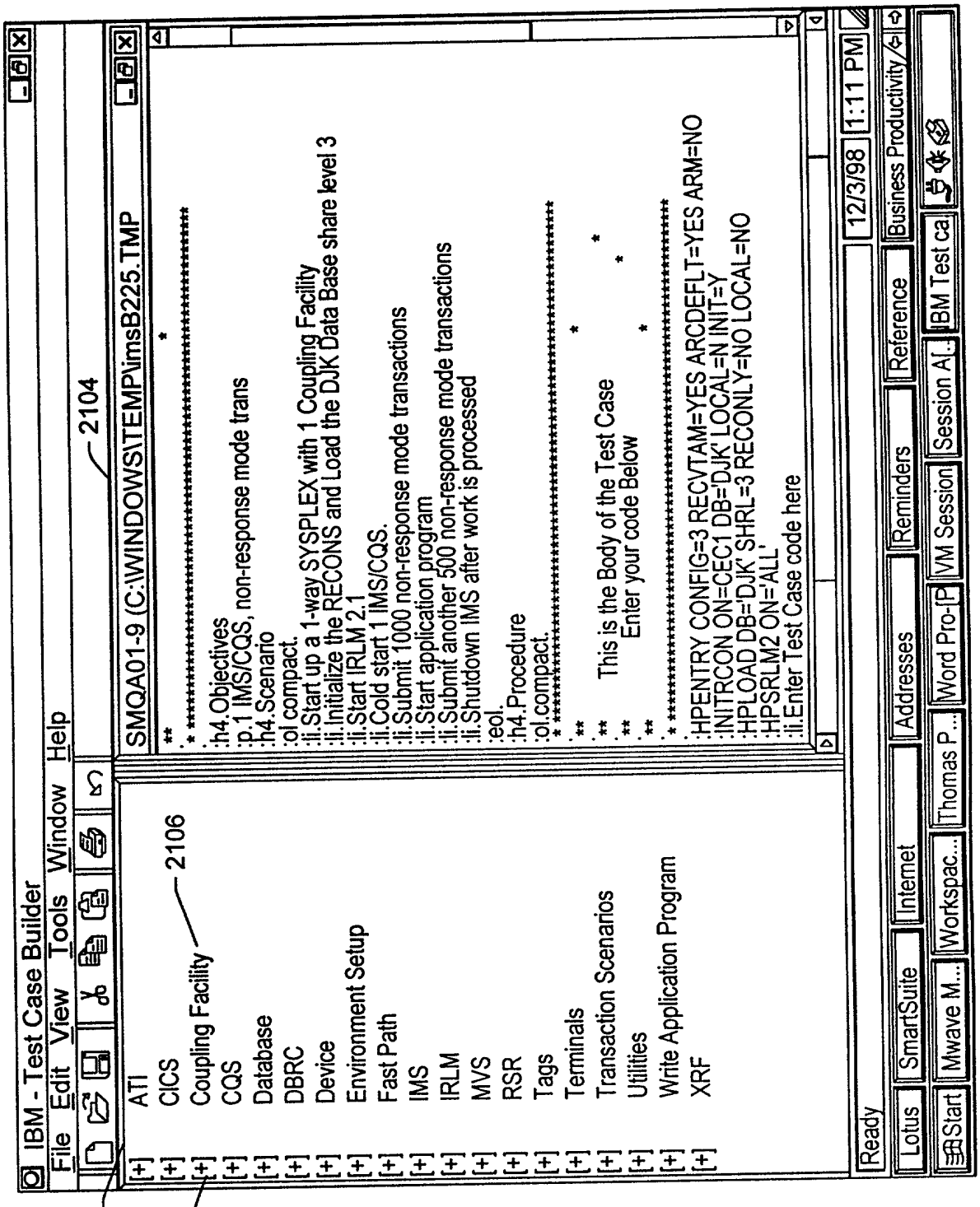

IBM - Test Case Builder
File Edit View Tools Window Help
SMQA01-9 (C:\WINDOWS\TEMP\imsB225.TMP
2102
2104
2106
2108
[+] ATI
[+] CICS
[+] Coupling Facility
[+] CQS
[+] Database
[+] DBRC
[+] Device
[+] Environment Setup
[+] Fast Path
[+] IMS
[+] IRLM
[+] MVS
[+] RSR
[+] Tags
[+] Terminals
[+] Transaction Scenarios
[+] Utilities
[+] Write Application Program
[+] XRF
:h4.Objectives
:p.1 IMS/CQS, non-response mode trans
:h4.Scenario
:ol.compact.
:li.Start up a 1-way SYSPLEX with 1 Coupling Facility
:li.Initialize the RECONS and Load the DJK Data Base share level 3
:li.Start IRLM 2.1
:li.Cold start 1 IMS/CQS.
:li.Submit 1000 non-response mode transactions
:li.Start application program
:li.Submit another 500 non-response mode transactions
:li.Shutdown IMS after work is processed
:eol.
:h4.Procedure
:ol.compact.
This is the Body of the Test Case
Enter your code Below
:HPENTRY CONFIG=3 RECVTAM=YES ARCDEFLT=YES ARM=NO
:INITRCON ON=CEC1 DB='DJK' LOCAL=N INIT=Y
:HPLOAD DB='DJK' SHRL=3 RECONLY=NO LOCAL=NO
:HPSRLM2 ON='ALL'
:li.Enter Test Case code here
Ready
12/3/98
1:11 PM
Lotus
SmartSuite
Internet
Addresses
Reminders
Reference
Business Productivity
Start
Mwave M...
Workspac...
Thomas P...
Word Pro-[P
VM Session
Session A[..
IBM Test ca

FIG. 21

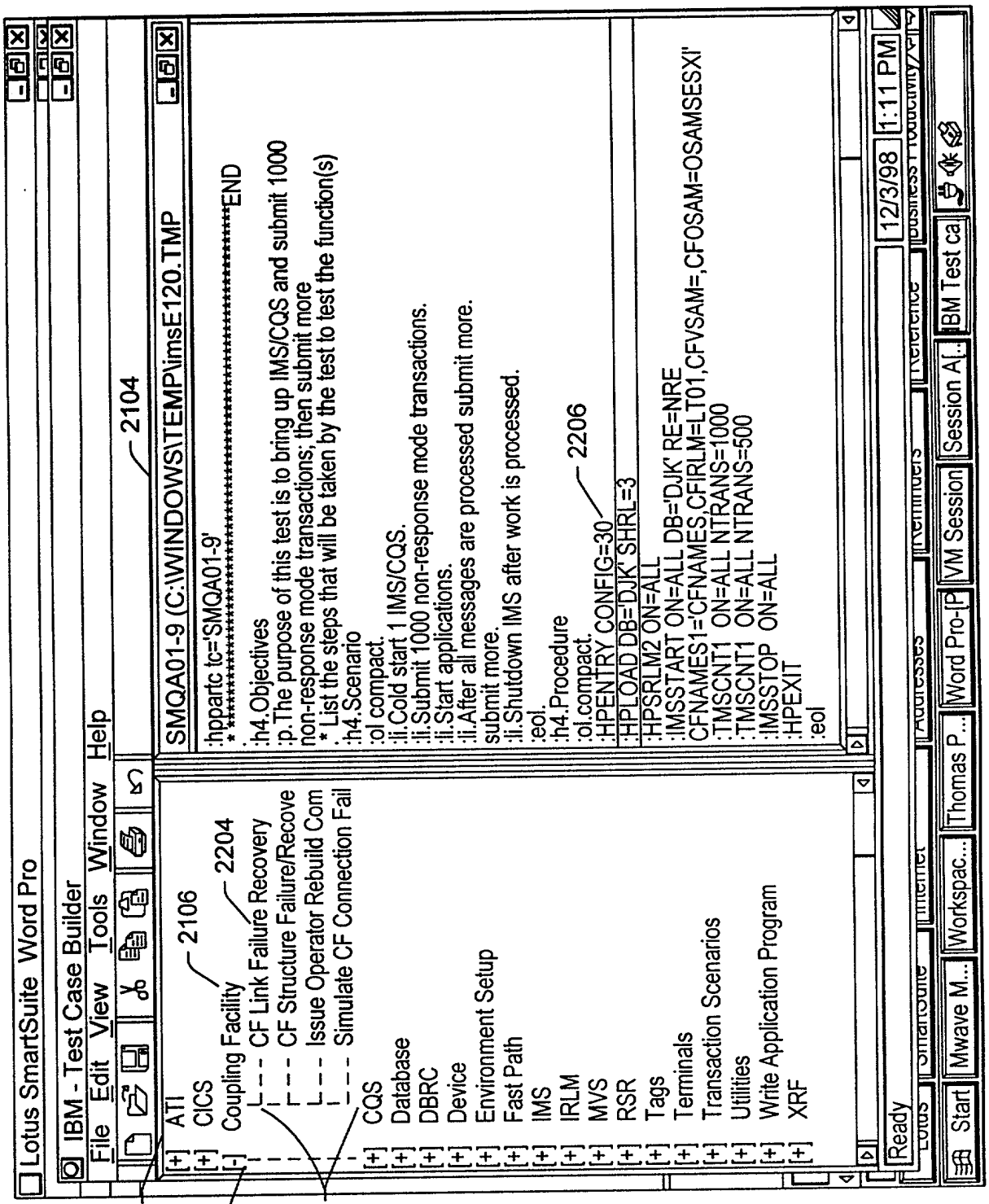

Lotus SmartSuite Word Pro
IBM - Test Case Builder
File Edit View Tools Window Help
2102
2104
2106
2108
2204
2206
[+] ATI
[+] CICS
[-] Coupling Facility
CF Link Failure Recovery
CF Structure Failure/Recove
Issue Operator Rebuild Com
Simulate CF Connection Fail
[+] CQS
[+] Database
[+] DBRC
[+] Device
[+] Environment Setup
[+] Fast Path
[+] IMS
[+] IRLM
[+] MVS
[+] RSR
[+] Tags
[+] Terminals
[+] Transaction Scenarios
[+] Utilities
[+] Write Application Program
[+] XRF
SMQA01-9 (C:\WINDOWS\TEMP\imsE120.TMP
:hppartc tc='SMQA01-9'
END
:h4.Objectives
:p.The purpose of this test is to bring up IMS/CQS and submit 1000
non-response mode transactions; then submit more
* List the steps that will be taken by the test to test the function(s)
:h4.Scenario
:ol compact.
:li.Cold start 1 IMS/CQS.
:li.Submit 1000 non-response mode transactions.
:li.Start applications.
:li.After all messages are processed submit more.
submit more.
:li.Shutdown IMS after work is processed.
:eol.
:h4.Procedure
:ol.compact.
:HPENTRY CONFIG=30
:HPLOAD DB='DJK' SHRL=3
:HPSRLM2 ON=ALL
:IMSSTART ON=ALL DB='DJK' RE=NRE
CFNAMES1='CFNAMES,CFIRLM=LT01,CFVSAM=,CFOSAM=OSAMSESX1'
:TMSCNT1 ON=ALL NTRANS=1000
:TMSCNT1 ON=ALL NTRANS=500
:IMSSTOP ON=ALL
:HPEXIT
:eol
Ready
Start
Mwave M...
Workspac...
Thomas P...
Word Pro-[P
VM Session
Session A[...
IBM Test ca
12/3/98
1:11 PM

FIG. 22

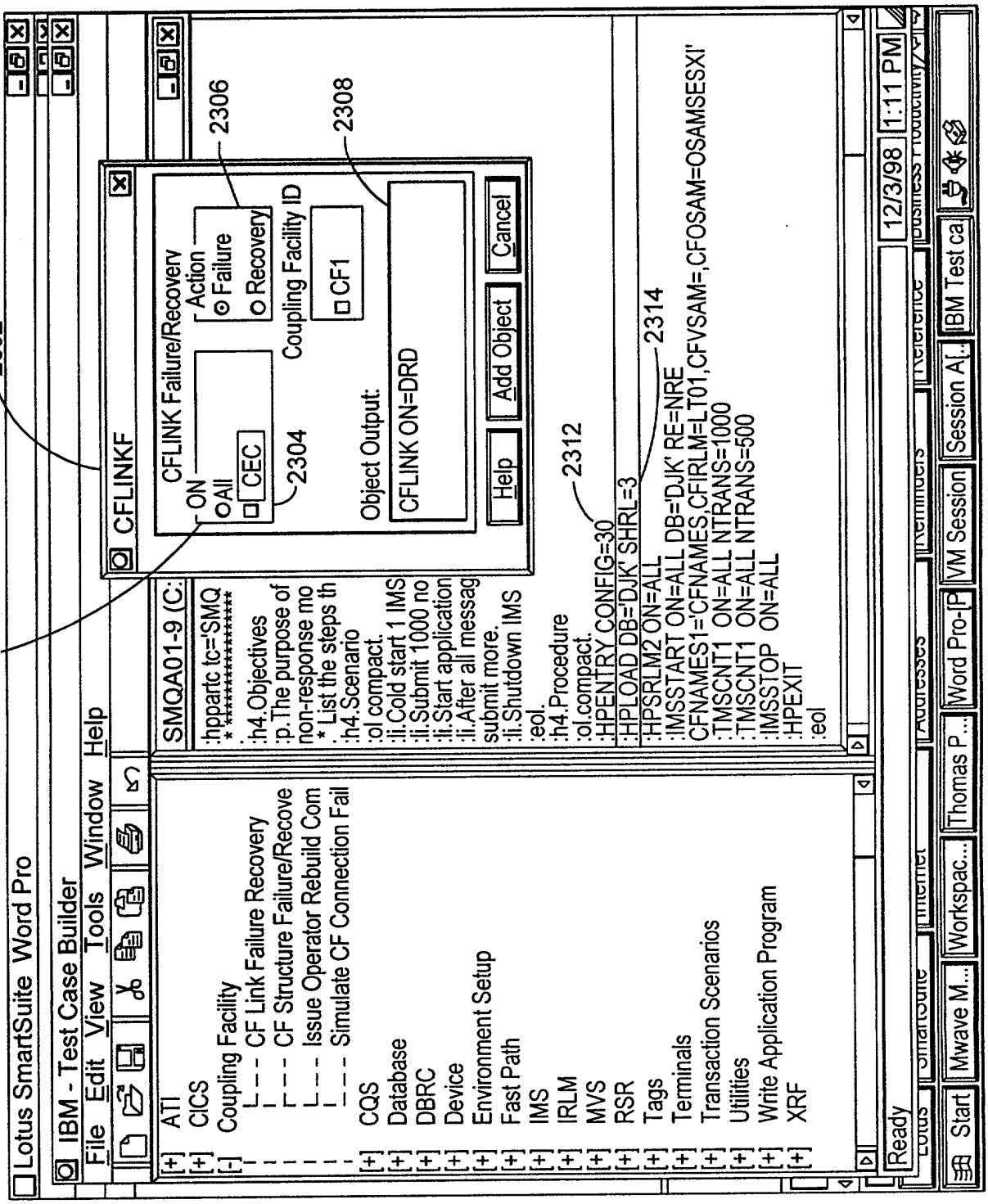

Lotus SmartSuite Word Pro
IBM - Test Case Builder
File Edit View Tools Window Help
2302
2310
CFLINKF
CFLINK Failure/Recovery
Action
Failure
Recovery
2306
ON
All
CEC
2304
Coupling Facility ID
CF1
2308
Object Output:
CFLINK ON=DRD
Help
Add Object
Cancel
SMQA01-9 (C:
:hpparte tc='SMQ
:h4.Objectives
:p.The purpose of
non-response mo
* List the steps th
:h4.Scenario
:ol compact.
:li.Cold start 1 IMS
:li.Submit 1000 no
:li.Start application
:li.After all messag
submit more.
:li.Shutdown IMS
:eol.
:h4.Procedure
:ol.compact.
:HPENTRY CONFIG=30
2312
:HPLOAD DB='DJK' SHRL=3
:HPSRLM2 ON=ALL
2314
:IMSSTART ON=ALL DB='DJK' RE=NRE
CFNAMES1='CFNAMES,CFIRLM=LT01,CFVSAM=,CFOSAM=OSAMSESXI'
:TMSCNT1 ON=ALL NTRANS=1000
:TMSCNT1 ON=ALL NTRANS=500
:IMSSTOP ON=ALL
:HPEXIT
:eol
ATI
CICS
Coupling Facility
CF Link Failure Recovery
CF Structure Failure/Recove
Issue Operator Rebuild Com
Simulate CF Connection Fail
CQS
Database
DBRC
Device
Environment Setup
Fast Path
IMS
IRLM
MVS
RSR
Tags
Terminals
Transaction Scenarios
Utilities
Write Application Program
XRF
Ready
12/3/98
1:11 PM
Start
Mwave M...
Workspac...
Thomas P...
Word Pro-IP
VM Session
Session A[..
IBM Test ca

FIG. 23

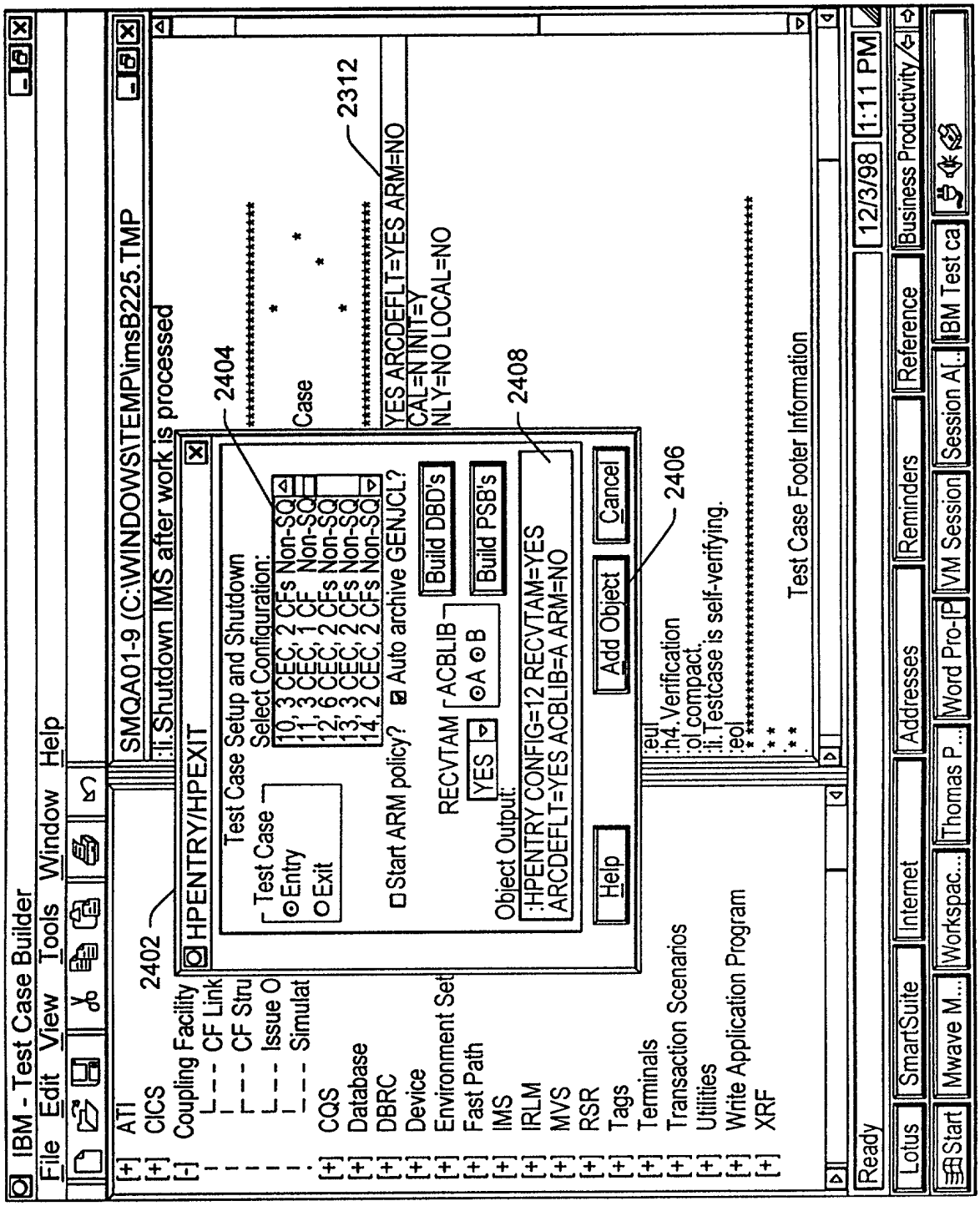

IBM - Test Case Builder
File Edit View Tools Window Help
SMQA01-9 (C:\WINDOWS\TEMP\imsB225.TMP
:li.Shutdown IMS after work is processed
HPENTRY/HPEXIT
2402
2404
2406
2408
2312
Test Case Setup and Shutdown
Select Configuration:
10, 3 CEC, 2 CFs Non-SQ
11, 3 CEC, 1 CF Non-SQ
12, 6 CEC, 2 CFs Non-SQ
13, 3 CEC, 2 CFs Non-SQ
14, 2 CEC, 2 CFs Non-SQ
Test Case
Entry
Exit
Start ARM policy?
Auto archive GENJCL?
RECVTAM
ACBLIB
YES
A B
Build DBD's
Build PSB's
Object Output:
:HPENTRY CONFIG=12 RECVTAM=YES
ARCDEFLT=YES ACBLIB=A ARM=NO
Help
Add Object
Cancel
Case
YES ARCDEFLT=YES ARM=NO
CAL=N INIT=Y
NLY=NO LOCAL=NO
Test Case Footer Information
:eul
:h4.Verification
:ol compact.
:li.Testcase is self-verifying.
:eol
[+] ATI
[+] CICS
[-] Coupling Facility
CF Link
CF Stru
Issue O
Simulat
[+] CQS
[+] Database
[+] DBRC
[+] Device
[+] Environment Set
[+] Fast Path
[+] IMS
[+] IRLM
[+] MVS
[+] RSR
[+] Tags
[+] Terminals
[+] Transaction Scenarios
[+] Utilities
[+] Write Application Program
[+] XRF
Ready
12/3/98
1:11 PM
Start
Lotus
SmartSuite
Internet
Mwave M...
Workspac...
Addresses
Thomas P...
Word Pro-[P
Reminders
VM Session
Reference
Session Al...
Business Productivity
IBM Test ca

FIG. 24

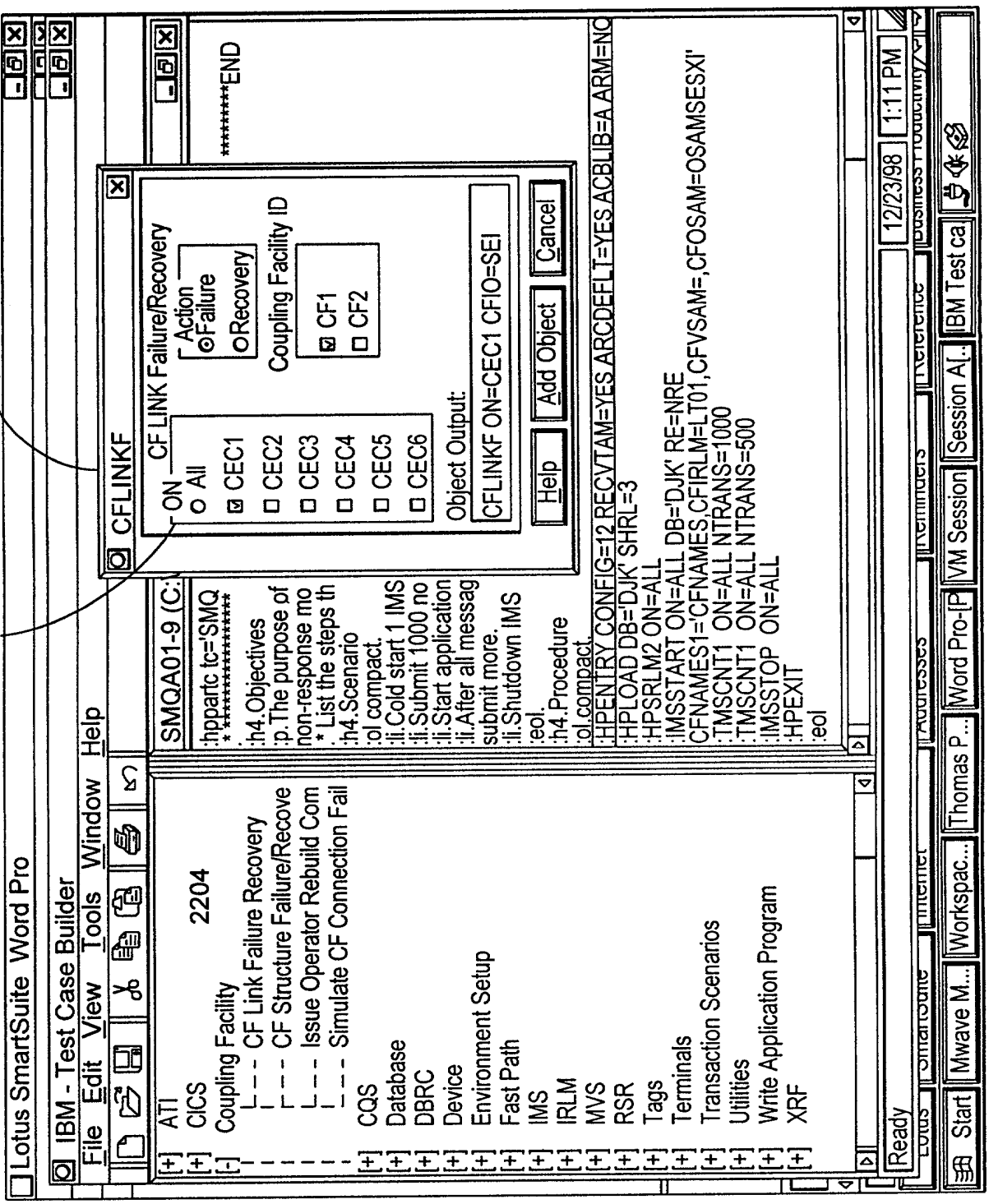

Lotus SmartSuite Word Pro
IBM - Test Case Builder
File Edit View Tools Window Help
2301
2310
CFLINKF
CF LINK Failure/Recovery
ON
All
CEC1
CEC2
CEC3
CEC4
CEC5
CEC6
Action
Failure
Recovery
Coupling Facility ID
CF1
CF2
Object Output:
CFLINKF ON=CEC1 CFIO=SEI
Help
Add Object
Cancel
SMQA01-9 (C:)
ATI
CICS 2204
Coupling Facility
CF Link Failure Recovery
CF Structure Failure/Recove
Issue Operator Rebuild Com
Simulate CF Connection Fail
CQS
Database
DBRC
Device
Environment Setup
Fast Path
IMS
IRLM
MVS
RSR
Tags
Terminals
Transaction Scenarios
Utilities
Write Application Program
XRF
:hppartc tc='SMQ
:h4.Objectives
:p.The purpose of
non-response mo
:h4.Scenario
:ol compact.
:li.Cold start 1 IMS
:li.Submit 1000 no
:li.Start application
:li.After all messag
submit more.
:li.Shutdown IMS
:eol.
:h4.Procedure
:ol.compact.
:HPENTRY CONFIG=12 RECVTAM=YES ARCDEFLT=YES ACBLIB=A ARM=NO
:HPLOAD DB='DJK' SHRL=3
:HPSRLM2 ON=ALL
:IMSSTART ON=ALL DB='DJK' RE=NRE
CFNAMES1='CFNAMES,CFIRLM=LT01,CFVSAM=,CFOSAM=OSAMSESXI'
:TMSCNT1 ON=ALL NTRANS=1000
:TMSCNT1 ON=ALL NTRANS=500
:IMSSTOP ON=ALL
:HPEXIT
:eol
********END
Ready
12/23/98
1:11 PM
Start
Mwave M...
Workspac...
Thomas P...
Word Pro-[P
VM Session
Session Al...
IBM Test ca

FIG. 25

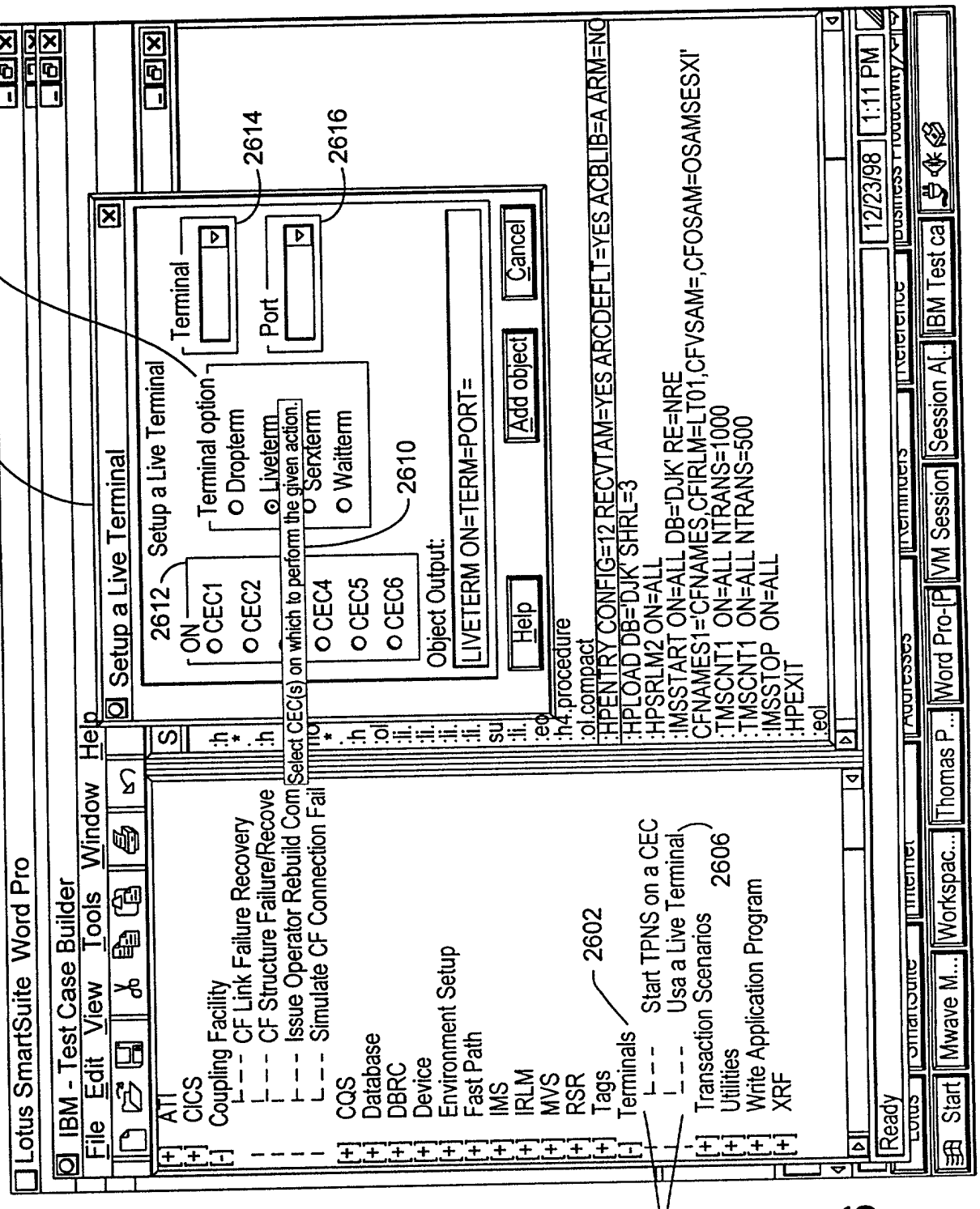

Lotus SmartSuite Word Pro
IBM - Test Case Builder
File Edit View Tools Window Help
Setup a Live Terminal
Setup a Live Terminal
Terminal
Terminal option
Dropterm
Liveterm
Serxterm
Waitterm
Port
2612
ON
CEC1
CEC2
CEC4
CEC5
CEC6
2610
2614
2616
2608
2602
Select CEC(s) on which to perform the given action.
Object Output:
LIVETERM ON=TERM=PORT=
Help
Add object
Cancel
:h4.procedure
:ol.compact
:HPENTRY CONFIG=12 RECVTAM=YES ARCDEFLT=YES ACBLIB=A ARM=NO
:HPLOAD DB='DJK' SHRL=3
:HPSRLM2 ON=ALL
:IMSSTART ON=ALL DB='DJK' RE=NRE
CFNAMES1='CFNAMES,CFIRLM=LT01,CFVSAM=,CFOSAM=OSAMSESXI'
:TMSCNT1 ON=ALL NTRANS=1000
:TMSCNT1 ON=ALL NTRANS=500
:IMSSTOP ON=ALL
:HPEXIT
:eol
ATI
CICS
Coupling Facility
CF Link Failure Recovery
CF Structure Failure/Recove
Issue Operator Rebuild Com
Simulate CF Connection Fail
CQS
Database
DBRC
Device
Environment Setup
Fast Path
IMS
IRLM
MVS
RSR
Tags
Terminals
Start TPNS on a CEC
Usa a Live Terminal
Transaction Scenarios
Utilities
Write Application Program
XRF
2602
2604
2606
Ready
Start
Mwave M...
Workspac...
Thomas P...
Word Pro-[P
VM Session
Session A[..
BM Test ca
12/23/98
1:11 PM

FIG. 26

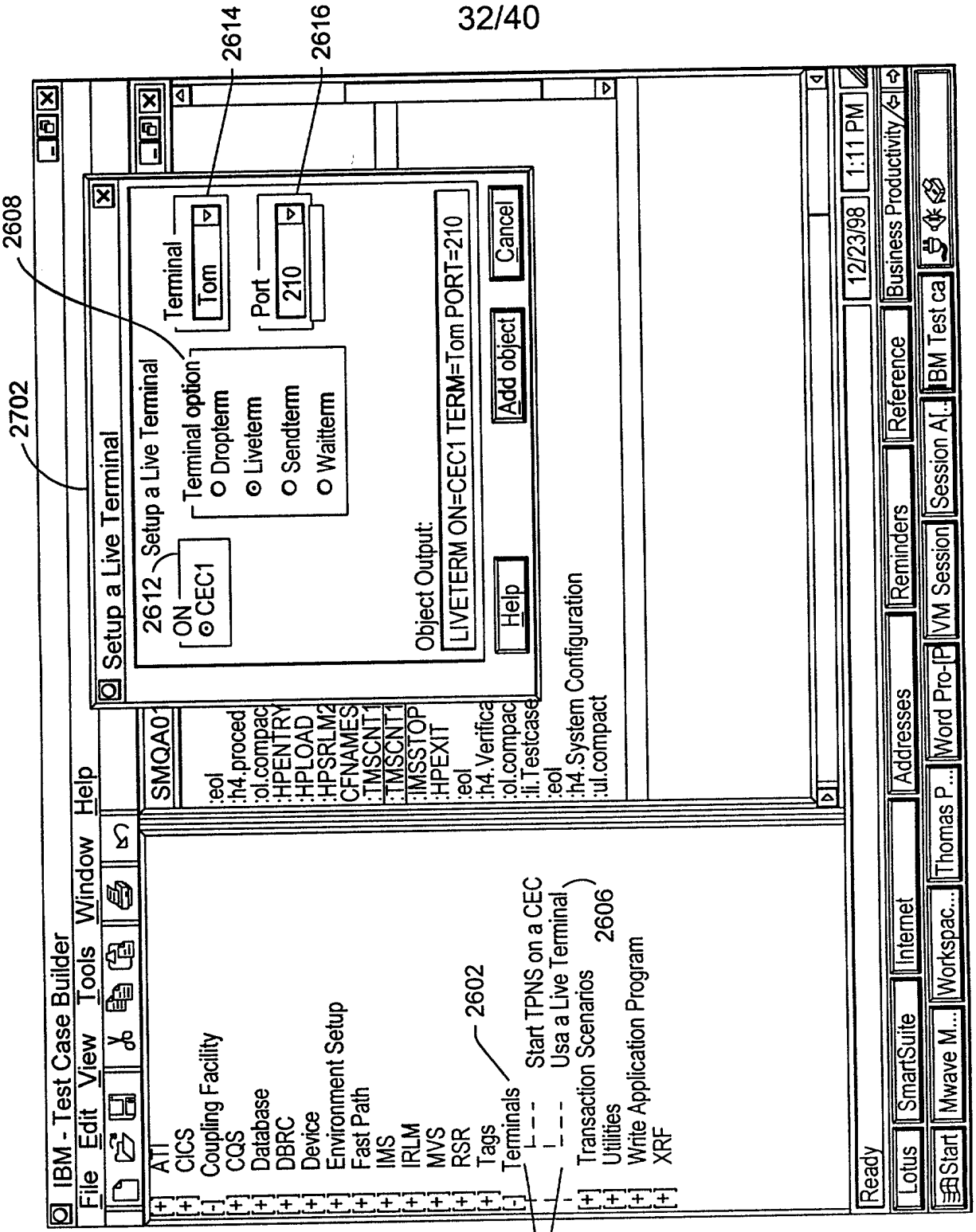

IBM - Test Case Builder
File Edit View Tools Window Help
ATI
CICS
Coupling Facility
CQS
Database
DBRC
Device
Environment Setup
Fast Path
IMS
IRLM
MVS
RSR
Tags
Terminals
Start TPNS on a CEC
Usa a Live Terminal
Transaction Scenarios
Utilities
Write Application Program
XRF
SMQA01
:eol
:h4.proced
:ol.compac
:HPENTRY
:HPLOAD
:HPSRLM2
CFNAMES
:TMSCNT1
:TMSCNT1
:IMSSTOP
:HPEXIT
:eol
:h4.Verifica
:ol.compac
:li.Testcase
:eol
:h4.System Configuration
:ul.compact
Setup a Live Terminal
2612
ON
CEC1
Terminal option
Dropterm
Liveterm
Sendterm
Waitterm
Terminal
Tom
Port
210
Object Output:
LIVETERM ON=CEC1 TERM=Tom PORT=210
Help
Add object
Cancel
Ready
Lotus
SmartSuite
Internet
Addresses
Reminders
Reference
Business Productivity
Start
Mwave M...
Workspac...
Thomas P...
Word Pro-IP
VM Session
Session Al...
IBM Test ca
12/23/98
1:11 PM
2608
2702
2614
2616
2602
2604
2606

FIG. 27

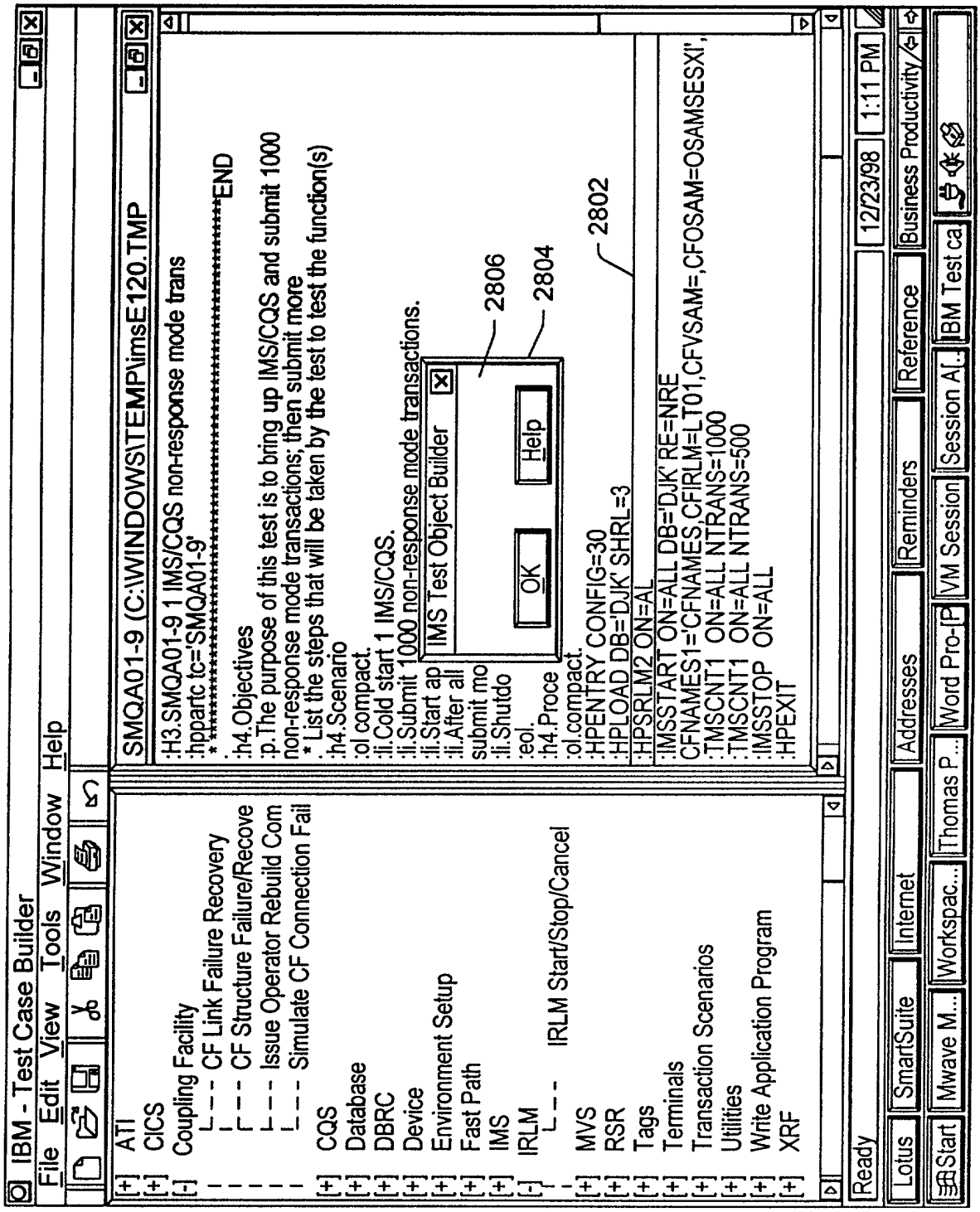

IBM - Test Case Builder
File Edit View Tools Window Help
[+] ATI
[+] CICS
[-] Coupling Facility
CF Link Failure Recovery
CF Structure Failure/Recove
Issue Operator Rebuild Com
Simulate CF Connection Fail
[+] CQS
[+] Database
[+] DBRC
[+] Device
[+] Environment Setup
[+] Fast Path
[+] IMS
[-] IRLM
IRLM Start/Stop/Cancel
[+] MVS
[+] RSR
[+] Tags
[+] Terminals
[+] Transaction Scenarios
[+] Utilities
[+] Write Application Program
[+] XRF
SMQA01-9 (C:\WINDOWS\TEMP\imsE120.TMP
:H3.SMQA01-9 1 IMS/CQS non-response mode trans
:hppartc tc='SMQA01-9'
END
:h4.Objectives
:p.The purpose of this test is to bring up IMS/CQS and submit 1000 non-response mode transactions; then submit more
* List the steps that will be taken by the test to test the function(s)
:h4.Scenario
:ol compact.
:li.Cold start 1 IMS/CQS.
:li.Submit 1000 non-response mode transactions.
:li.Start ap
:li.After all
submit mo
:li.Shutdo
:eol.
:h4.Proce
:ol.compact.
:HPENTRY CONFIG=30
:HPLOAD DB='DJK' SHRL=3
:HPSRLM2 ON=AL
:IMSSTART ON=ALL DB='DJK' RE=NRE
CFNAMES1='CFNAMES,CFIRLM=LT01,CFVSAM=,CFOSAM=OSAMSESX!',
:TMSCNT1 ON=ALL NTRANS=1000
:TMSCNT1 ON=ALL NTRANS=500
:IMSSTOP ON=ALL
:HPEXIT
IMS Test Object Builder
OK
Help
2806
2804
2802
Ready
12/23/98
1:11 PM
Lotus
SmartSuite
Internet
Addresses
Reminders
Reference
Business Productivity
Start
Mwave M...
Workspac...
Thomas P...
Word Pro-[P
VM Session
Session A[...
IBM Test ca

FIG. 28

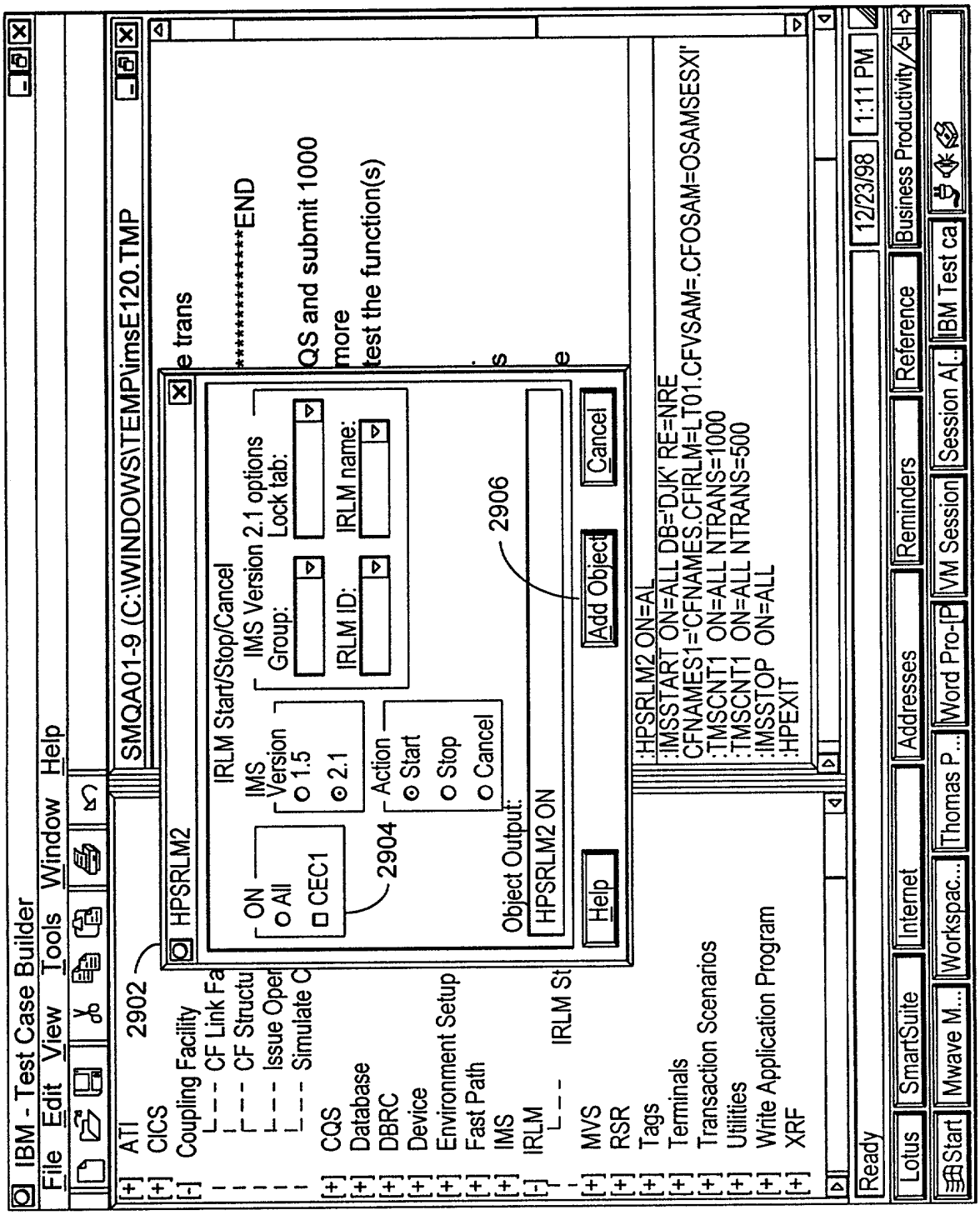

IBM - Test Case Builder
File Edit View Tools Window Help
SMQA01-9 (C:\WINDOWS\TEMP\imsE120.TMP
HPSRLM2
2902
2904
2906
IRLM Start/Stop/Cancel
IMS Version 2.1 options
IMS Version
Group:
Lock tab:
IRLM ID:
IRLM name:
Action
Start
Stop
Cancel
Object Output:
HPSRLM2 ON
Help
Add Object
Cancel
ATI
CICS
Coupling Facility
CF Link Fa
CF Structu
Issue Oper
Simulate C
CQS
Database
DBRC
Device
Environment Setup
Fast Path
IMS
IRLM
IRLM St
MVS
RSR
Tags
Terminals
Transaction Scenarios
Utilities
Write Application Program
XRF
:HPSRLM2 ON=AL
:IMSSTART ON=ALL DB='DJK' RE=NRE
CFNAMES1='CFNAMES.CFIRLM=LT01.CFVSAM=.CFOSAM=OSAMSESX'
:TMSCNT1 ON=ALL NTRANS=1000
:TMSCNT1 ON=ALL NTRANS=500
:IMSSTOP ON=ALL
:HPEXIT
QS and submit 1000
test the function(s)
Ready
12/23/98
1:11 PM
Start
Lotus
SmartSuite
Mwave M...
Workspac...
Internet
Thomas P...
Addresses
Word Pro-[P
Reminders
VM Session
Reference
Session A[...
Business Productivity
IBM Test ca

FIG. 29

```
.* ********************************************************************
.* IMS Test Object Change History                                     *
.* mm/dd/yy - xxx                                                     *
.* ********************************************************************
.*
.* ********************************************************************
.* HPSRLM2 Macro Start IRLM 2.1 on indicated CEC                      *
.* ********************************************************************
.gs rules (vat)
.aa HPSRLM2 HPSRLM2
.dm HPSRLM2 on
.gs attval ON as *onn
.gs attval OPTIONS as *opt
.*-----------------------------------------------------------------
.if &e'&*onn = 0
.th .go error
.if &u'&*onn = ALL
.th .go all
.if &l'&*onn = 4
.th .go scec
.el .go mcec
.*-----------------------------------------------------------------
...all
:li.Call Hpcs_Start_IRLMs_21 which will:
:ol compact.
:li.Start IRLM 2.1 on all CECS with a lock structure of LT01
.go cont1
.*-----------------------------------------------------------------
...scec
.if &e'&*opt = 1
.th .go popt
:li.Call Hpcs_Start_an_IRLM_21 which will:
:ol compact.
:li.Start IRLM 2.1 on &u'&*onn with a lock structure of LT01
.go cont1
.*-----------------------------------------------------------------
...popt
:li.Call Hpcs_Start_an_IRLM_21 which will:
:ol compact.
:li.Start IRLM 2.1 on &u'&*onn specifying the following options;
&u'&*opt
.go cont1
```

FIG. 30A

```
.*-----------------------------------------------------------------
...mcec
:li.Call Hpcs_Start_an_IRLM_21 which will:
:ol compact.
:li.Start IRLM 2.1 on &u'&*onn with a lock structure of LT01
.*-------------------Process Parts Used--------------------
...cont1
:eol.
.se fn = 'IRLME2N'
.se ft = PROCEDURE
.hpchkpt
.se *fn1 = 'IRLM
.se *fn2 = 2.1
.se fn = &*fn1.&*fn2
.hpadfun
.go done
.*-----------------------------------------------------------------
...error
:li.+++ERROR in HPSRLM2 INVALID ON Parameter***********
.*-----------------------------------------------------------------
...done
.dm off
.* ***************************************************************************
.* end of HPSRLM2 Macro                                                      *
.* ***************************************************************************
```

FIG. 30B

```
HPSRLM2: /*ON=(CECx,ALL) LOCKTAB=1 GROUP=g IRLMID=i   */
   Call Parse_variables
   upper on
   if result>1 then return result
   If Totall-=on1+options1 then return 6
   If on1=0 then return 7
   If options1-=0 & on='ALL' then return 18
   If options1-=0 & onn>1 then return 18
   data=eighty_blanks
   call Put_line_on_Stack
   Call Put_line_on_stack
   If on='ALL' then do
      Data ='Call Hpcs_Start_IRLMs_21' """"
      Call Put_line_on_stack
      end
   If onn>1 then do
      do j=1 to onn
         work_ec = substr(word(on,j),2,3)
         Call Check_current_ec
         Data ='Call Hpcs_Start_an_IRLM_21' """"
         Call Put_line_on_stack
      end
   end
   If onn=1 & on-='ALL' then do
      work_ec = substr(on,2,3)
      Call Check_current_ec
      If options1>0 then do
         Work_String=options
         Call Remove_High_Values
         options = Work_String
         Data = 'OPTIONS='||""||options||""
         Call Put_line_on_stack
      end
      Data ="Call Hpcs_Start_an_IRLM_21' """"
      Call Put_line_on_stack
   end
   Call Add_Library 'HPC$SUB'
return
```

```
/*********************************************************************&START&*/
/* Routine Name: Hpcs_start_irlms_21                                  */
/* Called by:                                                         */
/* Parameters passed:                                                 */
/* Routines called:                                                   */
/* Routine Function:                                                  */
/*********************************************************************&END&***/
Hpcs_start_irlms_21:
   Call Save_callers_environment
   Call Hpcs_logit 'Hpcs_start_irlms_21 started'
   If Options-=" & Options-='OPTIONS' then do
      Call Hpcs_logit 'Options may not be specified when'
      Call Hpcs_logit 'starting "all" Irlms 2.1'
      goto Hpcs_test_case_aborted
   end
   Irlm_process='Start'
   Call Process_all_irlms
   Call Restore_callers_environment
   Return 0

/*********************************************************************&START&*/
/* Routine Name: Process_all_Irlms                                    */
/* Called by:                                                         */
/* Parameters passed:                                                 */
/* Routines called:                                                   */
/* Routine Function:                                                  */
/*********************************************************************&END&***/
Process_all_Irlms:
   ec=1
   do until forever=true
      CMS 'GLOBALV SELECT MULTIEC STACK EC'ec
      Pull NewEC
      if Index(' 'Sessions' ',' 'NewEC' ')=0 or,
      ec>Maxcec or,
      NewEC=" then do
      Goto Process_all_Irlms_exit
   end
   CMS 'GLOBALV SELECT DOAUTO SET SESSION' NewEC
   CMS 'GLOBALV SELECT DOAUTO SET ECID' NewEC
   Session=NewEC
   Call Process_an_Irlm
   ec=ec+1
end
```

FIG. 32A

```
   goto Process_all_Irlms_exit
Process_all_Irlms_exit:
   return

/*********************************************************************&START&*/
/* Routine Name: Process_an_Irlm                                     */
/* Called by:                                                      */
/* Parameters passed:                                              */
/* Routines called:                                                */
/* Routine Function:                                               */
/*********************************************************************&END&***/
Process_an_Irlm:
   If Irlm_process='Start' then do
      Call Hpcs_clear_all
      Call Get_irlm_21_Options
      Send 'S IRLME2N,'||Irlm_21_Options
      Wait #1
      Call Hpcs_logit 'Starting IRLME2N on '||NewEC
      Call Hpcs_logit Irlm_21_Options
      hpcs_onerror=onerror
      onerror=False
      CALL DOWAIT '5 1 IRLM INITIALIZATION COMPLETE'
/*    Wait #9:00 Scrhas('RLM INITIALIZATION COMPLETE')
      Wait_rc=rc
      onerror=hpcsonerror
      If Wait_rc=0 then do
         hpcs_onerror=onerror
         onerror=False
         Wait #10 Scrhas('ABEND=S000 U2018')
         Wait_rc=rc
         onerror=hpcs_onerror
         If Wait_rc=1 then do
            Call Hpcs_logit 'Start Irlm issued with active IRLM"s'
            goto Hpcs_test_case_aborted
         end
         Call Hpcs_logit 'Irlm failed to initialize, reason unknown'
         goto Hpcs_test_case_aborted
      end
/*
      Goto Process_an_Irlm_Exit
   end

   If Irlm_process='Cancel' | Irlm_process='Stop' then do
      Call Hpcs_clear_all
      Send 'D A,L'||ENTER
```

FIG. 32B

```
Wait #10 Scrhas('IEE114I')
hpcs_onerror=onerror
onerror=False
/*********************************************************************/
/* look for RLM after IEE114I message                                */
/*********************************************************************/
Wait #0 Scrhas('RLM' (HITROW +1:1) (MAXROW : MAXCOL))
Wait_rc=rc
```

FIG. 32C